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FINAL

ENVIRONMENTAL IMPACT REPORT

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GOLDEN GATE HEIGHTS
RESIDENTIAL DEVELOPMENT

ASSESSOR'S BLOCKS 1928, 1928B, 1860B AND 1929A

Certified July 3, 1975
City Planning Commission Resolution #7349

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San Francisco (Calif.).
 Dept. of City Planning.
Final environmental
 impact report : Golden
    1975.

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SUMMARY

A residential development of three and four-bedroom homes is proposed for construction on hillside lots of the Golden Gate Heights section of San Francisco.

The project sponsor, Hawaii-San Francisco Investment Company, seeks to construct the 83 residences for re-sale at from $82,500 to $105,000.

Certain adverse effects, both short and long-term, can be anticipated should the project be permitted. Short-term adverse effects would be dust and noise of construction on the site and on the surrounding streets from construction vehicles. Major permanent impacts would be the destruction of natural habitat, increased chance of soil erosion, risks to life and property from seismic activity and impacts on City services and facilities proportionate to the size of the project.

Construction impacts can be mitigated by observing appropriate working hours and conforming to existing statutes relating to noise abatement. Impacts relative to soil stability can be mitigated by adherence to the foundation engineering recommendations of qualified engineers.

CHAPTER I

PROJECT DESCRIPTION

The proposed project involves the construction of an owner occupied residential housing development consisting of 83 three and four bedroom homes, on approximately 10 acres of previously undeveloped land in San Francisco's Golden Gate Heights district (see Figures 1 & 2). These single family homes are expected to sell for prices ranging from $82,500 to $105,000.

Purpose of Project

The project sponsor seeks to realize a profit on his investment in the land by developing the area for its best economic use consistant with existing land use regulations.

Site Location

The four parcels of land to be used for this proposed development are located in Assessor's Blocks 1860B, 1928, 1928B, and 1929A within the City and County of San Francisco. These particular blocks are hilly and of irregular shape (see Figure 2). Individual lots within these blocks average 30 X 100 feet yeilding gross square footages of 3000 square feet. Some lots are of odd size owing to the irregular shape of the blocks however, none are less than the 2640 square foot minimum provided for by Sections 124 and 127 of the City's Planning Code.

The entire proposed development is zoned R-1 (single family-low density), as is most of the area immediately adjacent to it.

Building height limits of the proposed site, as provided for by Section 121 of the Planning Code, are 40 feet.

Types of Buildings

The proposed project would consist of wooden frame buildings supported by either concrete piers cast in place, or concrete slabs placed on grade. Eight 3 and 4 bedroom configurations are proposed which are designed to conform to existing landforms and the neighborhood architectural character. Each of the proposed homes is to be constructed over a two-car garage. Their color will be generally earth tones.

Pertinent features of these individual configurations are summarized in Table 1. Artists renditions of the configurations are displayed in Figures 3 through 11 and their proposed locations within the development are illustrated by Figures 12 through 15.

Sales Program

The developer's sales program for this project shal promote affirmative action in housing by following the provisions of the Sales Program Section (Section 1342) of the Subdivision Code passed by the Board of Supervisors on April 28, 1975

PROPOSED DEVELOPMENT LOCATIONS

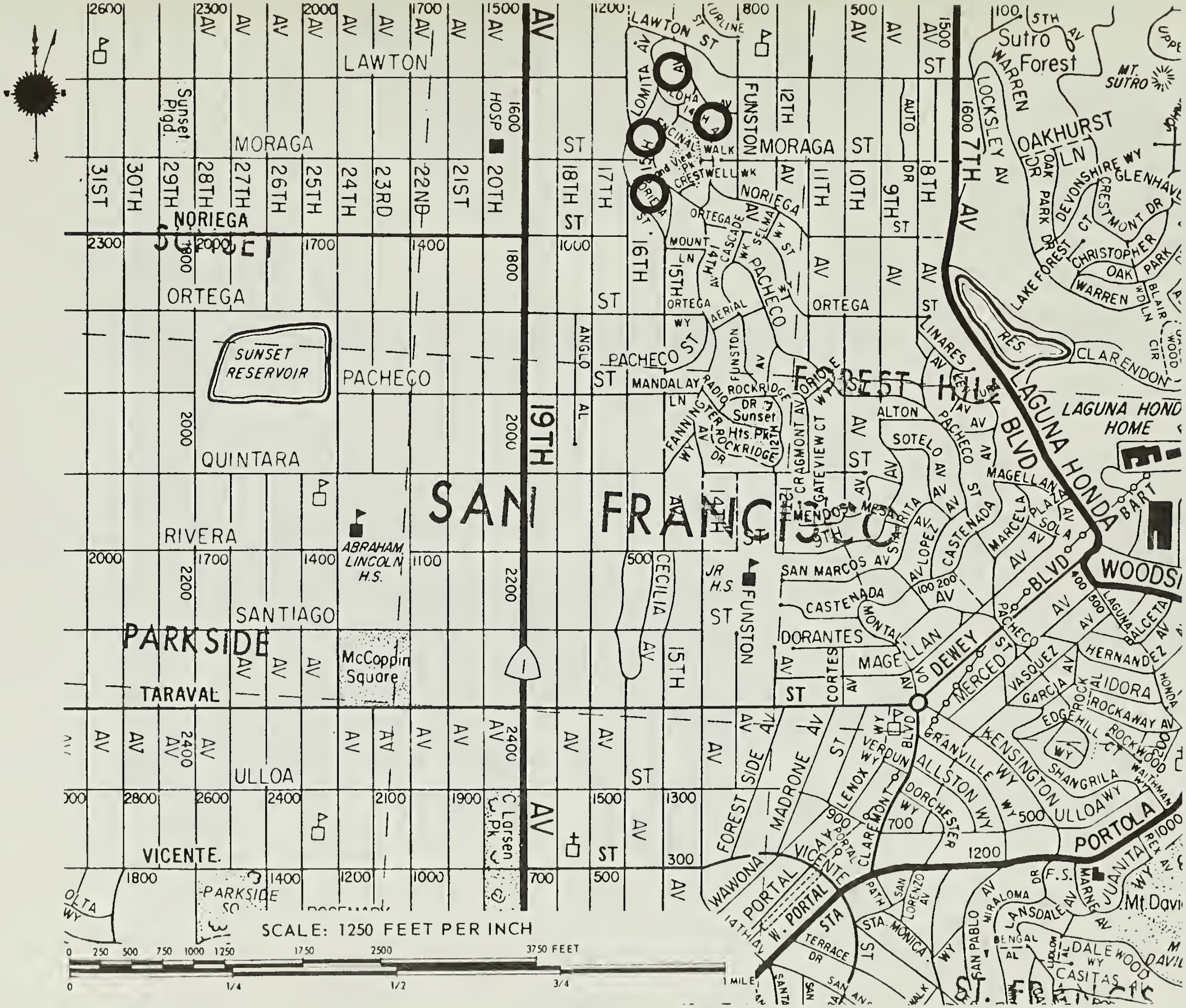


FIGURE 1

VICINITY MAP

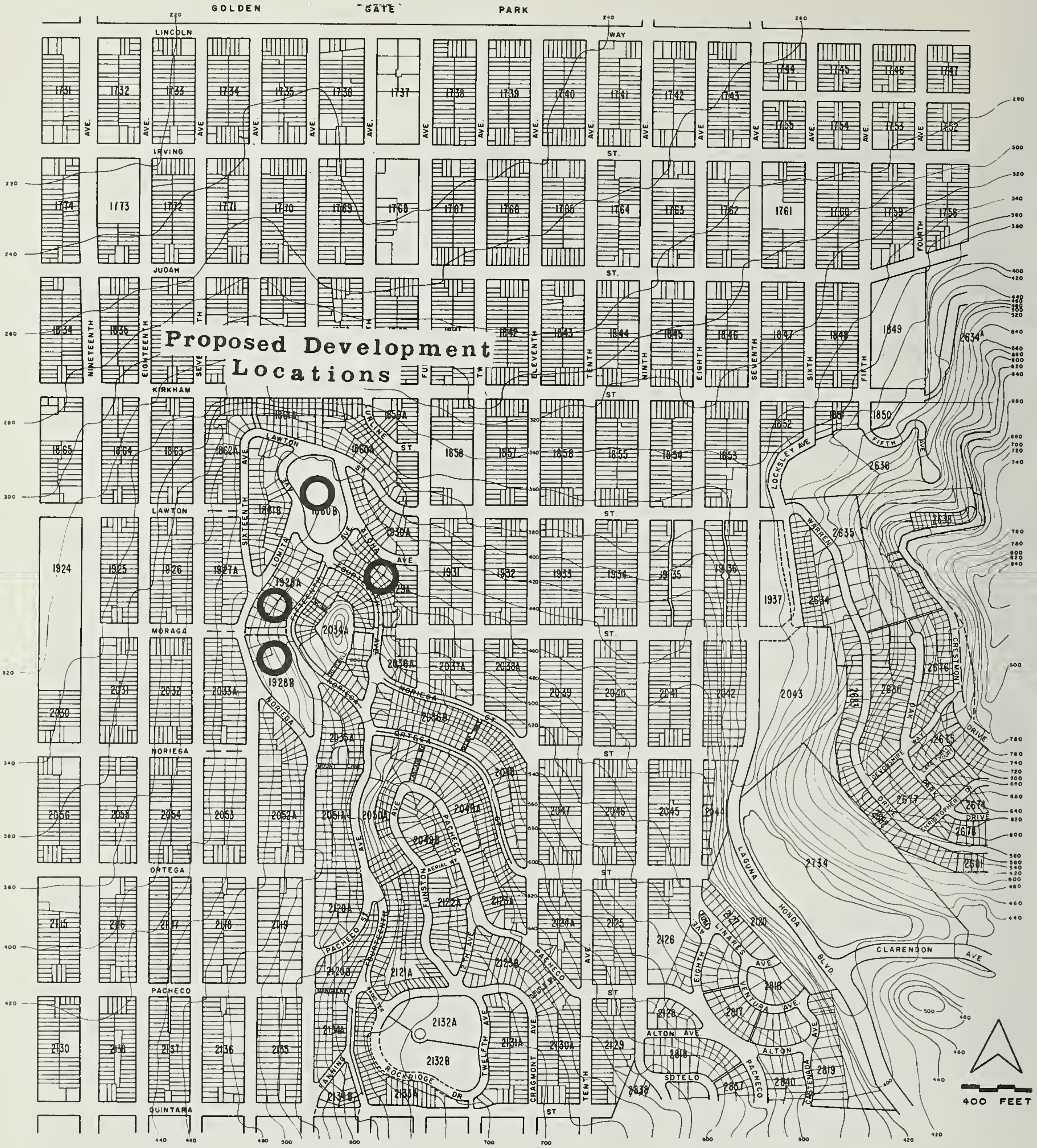


FIGURE 2

TOPOGRAPHICAL MAP

TABLE I

GOLDEN GATE HEIGHTS

PROJECT CONFIGURATION

SUMMARY

CONFIGURATION	NUMBER PROPOSED	FLOOR SPACE*	STORIES	BEDROOMS	DESIGN POPULATION MAXIMUMS	PROJECTED POPULATION
A	12	2100	3	4	6	72
B	17	2015	2	3	5	85
C	8	2050	1	3	5	40
D	16	2070	2	3	5	80
E	6	2400	2	4	6	36
F	11	2040	3	3	5	55
G	6	3070	2	3	5	30
H	7	3104	2	4	6	42
						440 Total**

*Floor space statistics quoted in square feet

** Population totals are an arithmetic function of people X bedrooms only and represent maximums rather than expected totals.

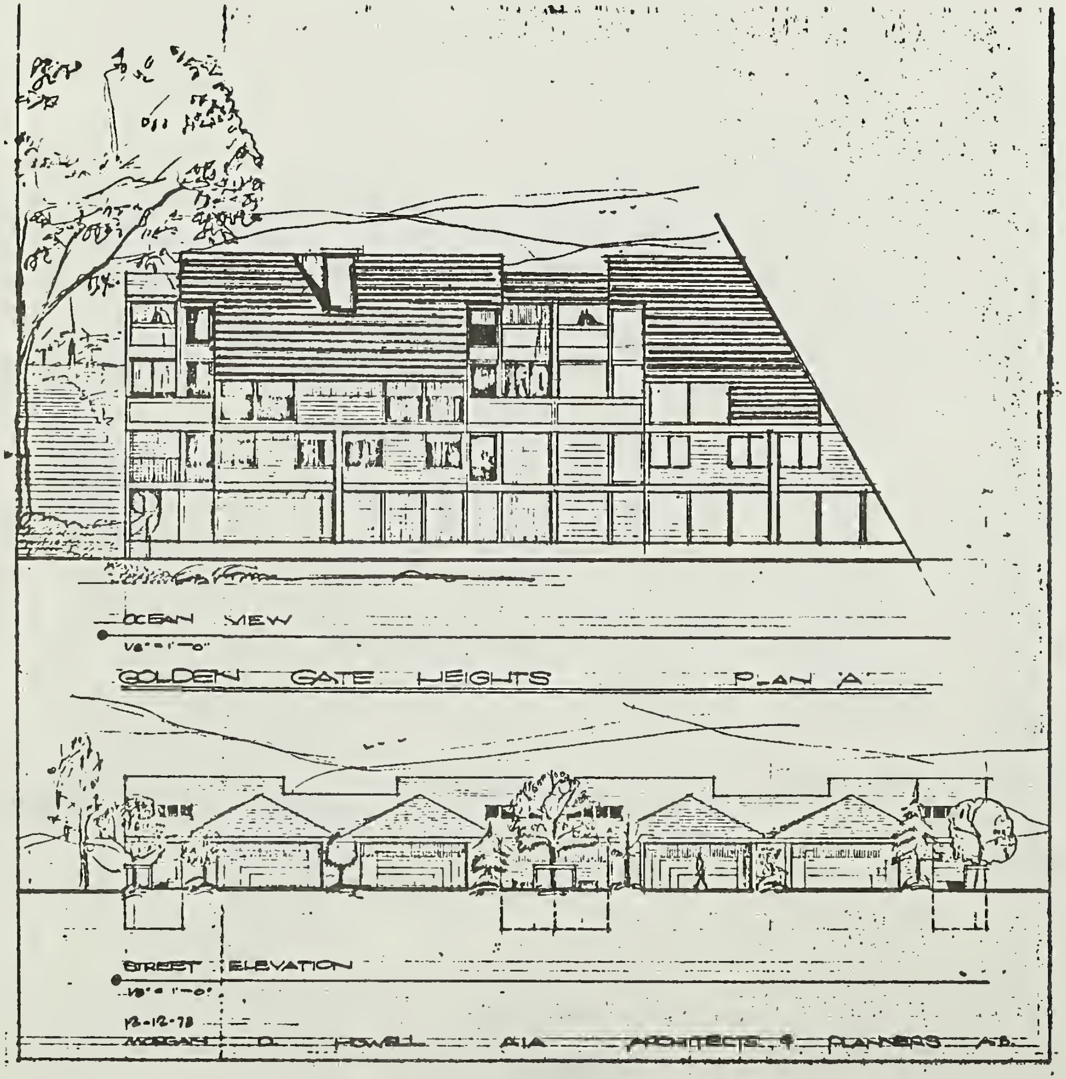

OCEAN VIEW
1/8" = 1'-0"
GOLDEN GATE HEIGHTS PLAN "A"
STREET ELEVATION
1/8" = 1'-0"
12-12-78
MORGAN D. HOWELL AIA ARCHITECTS & PLANNERS A.D.

FIGURE 3

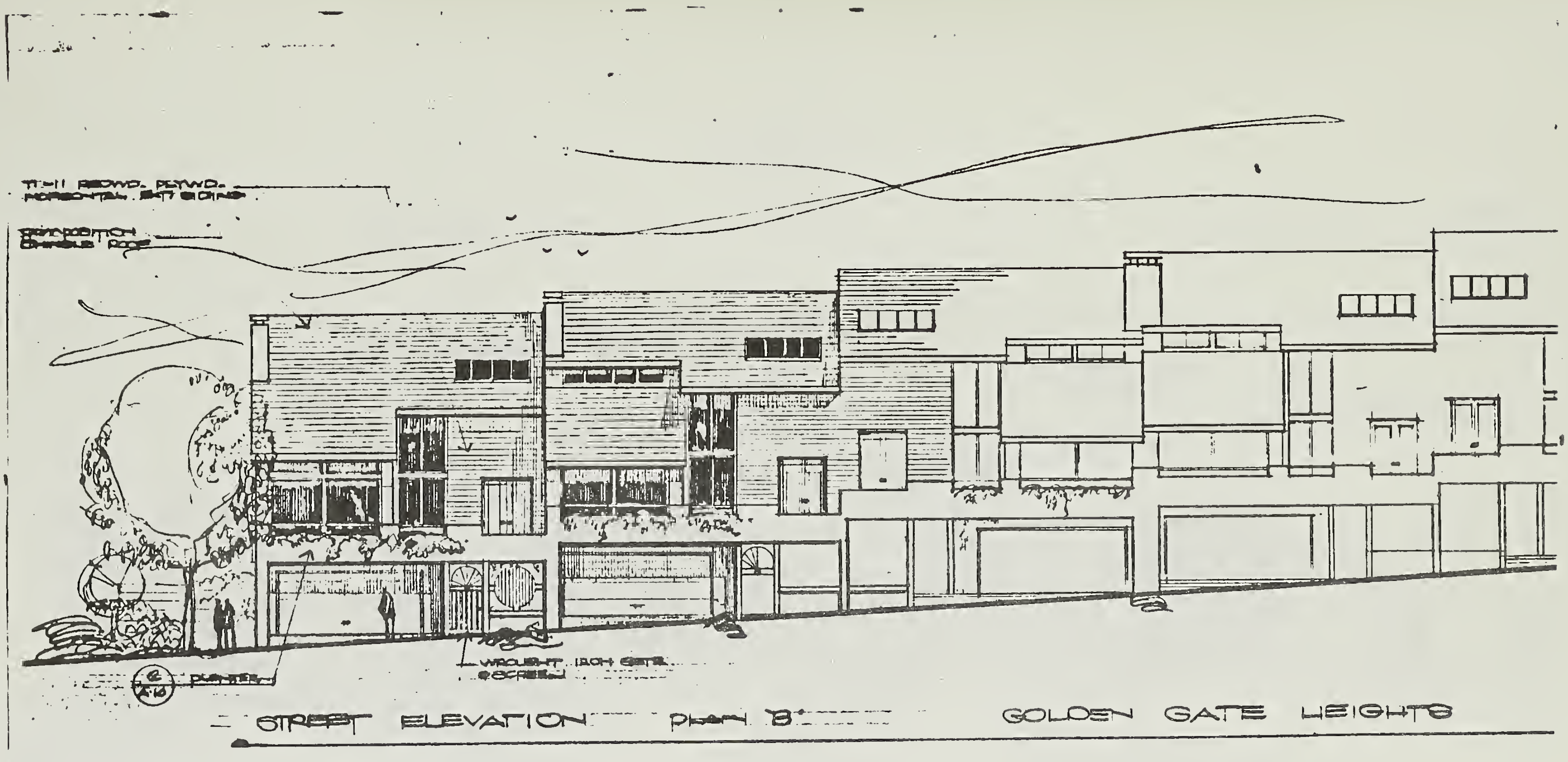
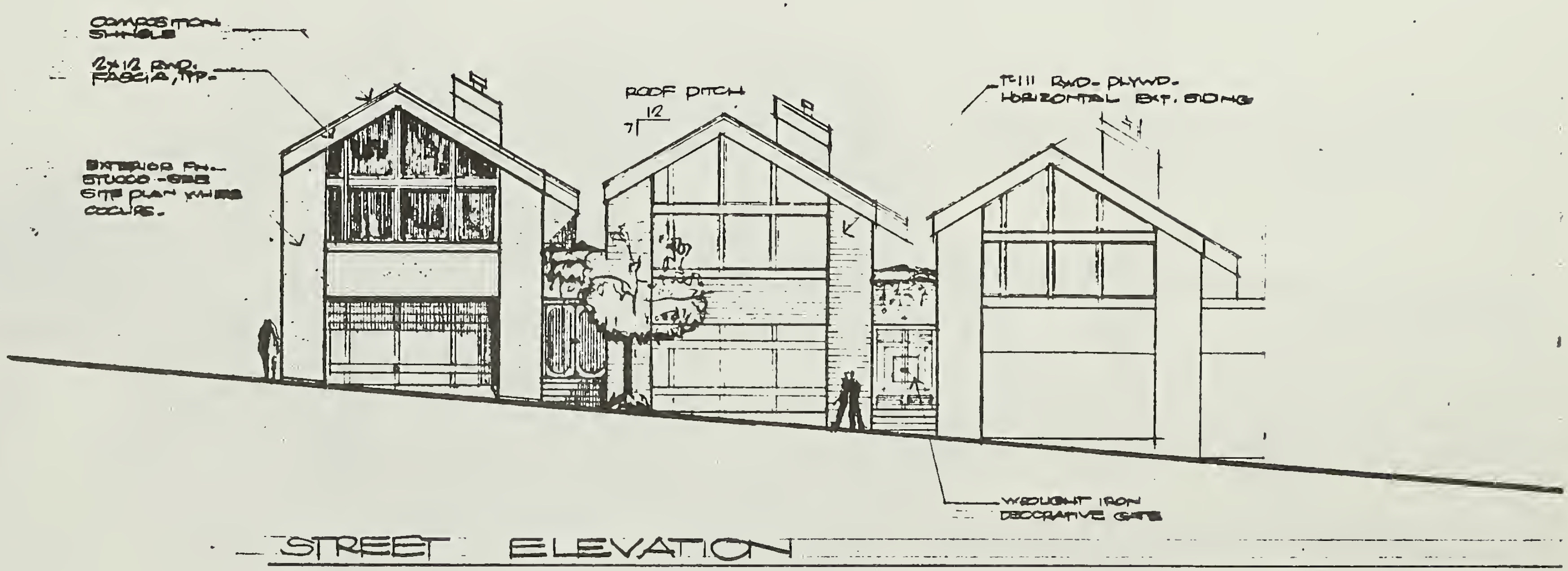

T1-11 REDWD. PLYWD.
HORIZONTAL BATT SIDING
COMPOSITION
SHINGLE ROOF
6
A-10
PLANTER
WROUGHT IRON GATE
& SCREEN
STREET ELEVATION PLAN 'B'
GOLDEN GATE HEIGHTS

FIGURE 4


COMPOSITION SHINGLE
2x12 RWD. FASCIA, TYP.
EXTERIOR FIN. STUCCO - SEE SITE PLAN WHERE OCCURS.
ROOF PITCH
7
12
T-111 RWD. PLYWD. HORIZONTAL EXT. SIDING
WROUGHT IRON DECORATIVE GATE
STREET ELEVATION

PLAN 'C'

FIGURE 5

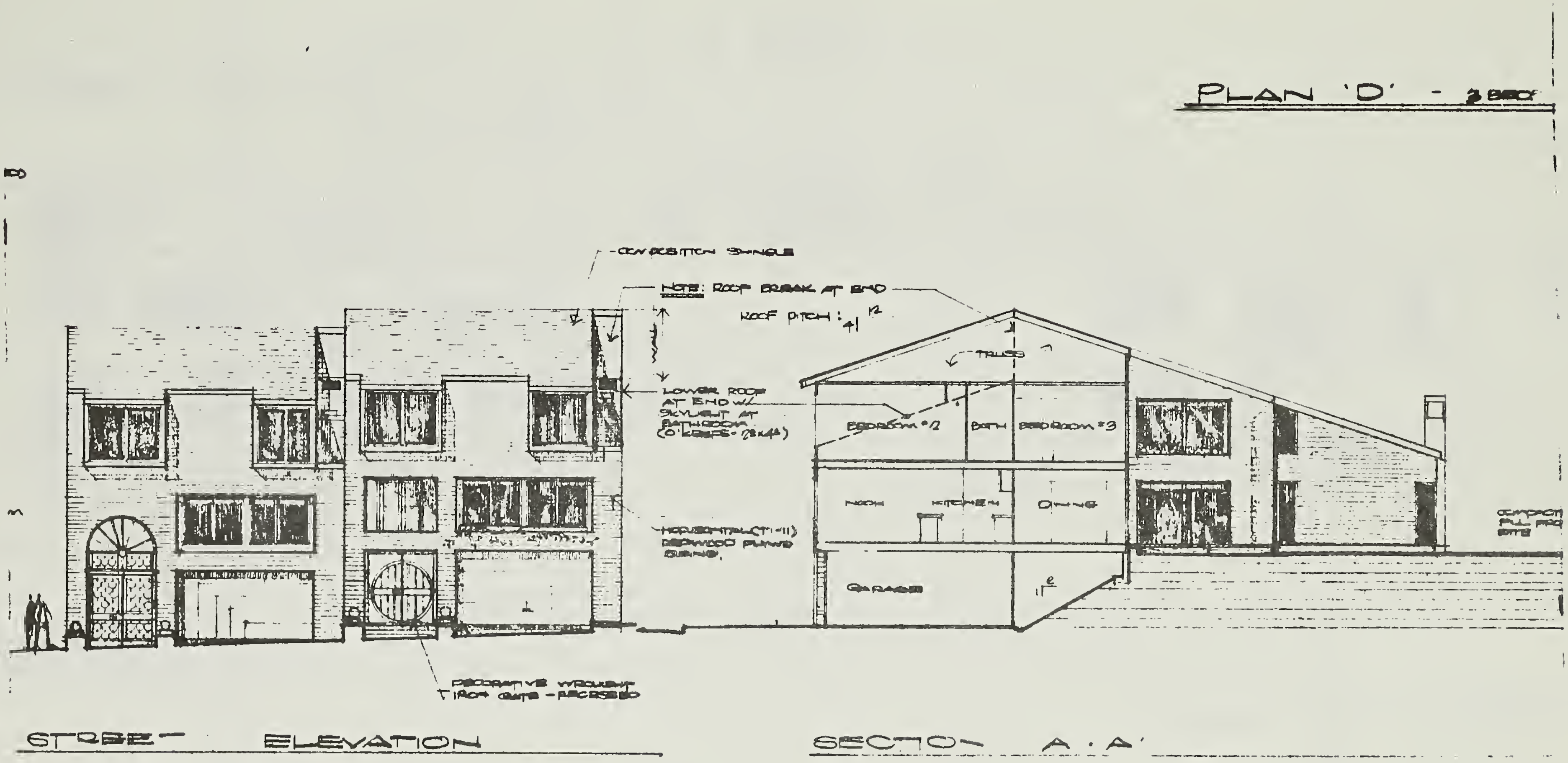

PLAN 'D' - 3 BED
COMPOSITION SHINGLE
NOTE: ROOF BREAK AT END
ROOF PITCH: 4/12
TRUSS
LOWER ROOF AT END W/ SKYLIGHT AT BATHROOM
HORIZONTAL (T1-11) REDWOOD PLYWD SIDING.
BEDROOM #2
BATH
BEDROOM #3
NOOK
KITCHEN
DINING
GARAGE
DECORATIVE WROUGHT IRON GATE - RECESSED
STREET ELEVATION
SECTION A-A'

FIGURE 6

PLAN 'E' - 4 BEDROOM

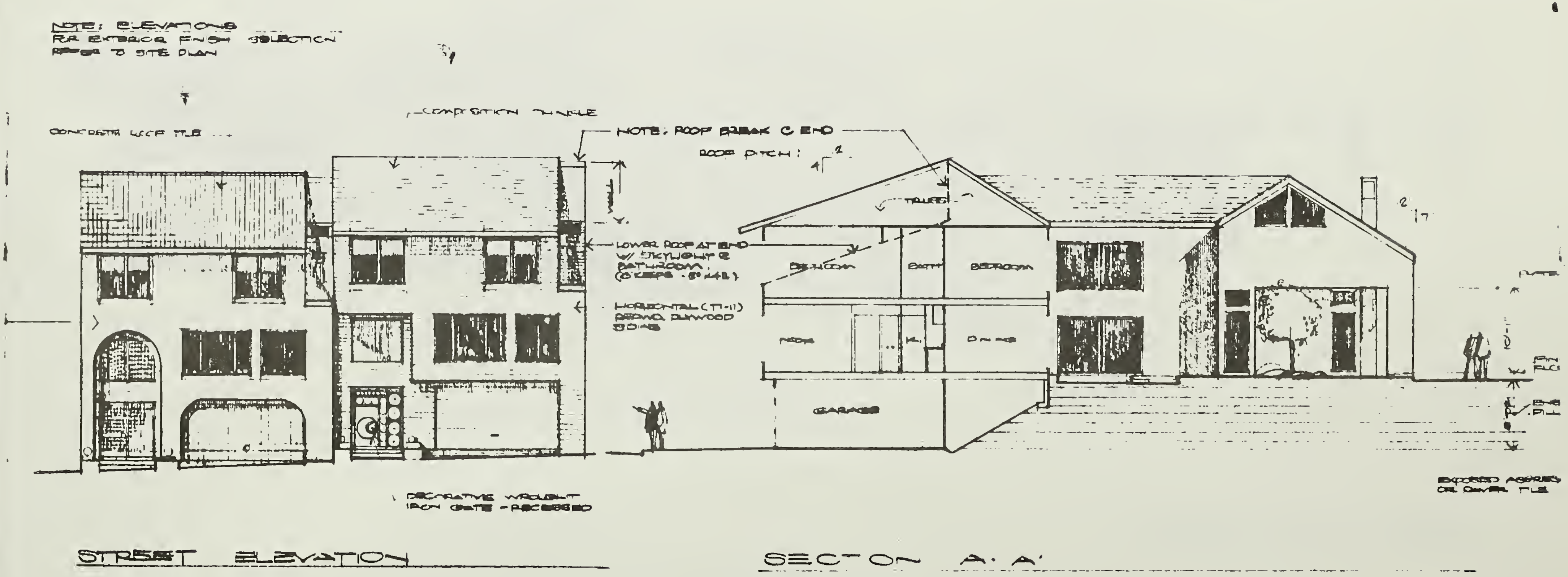


FIGURE 7

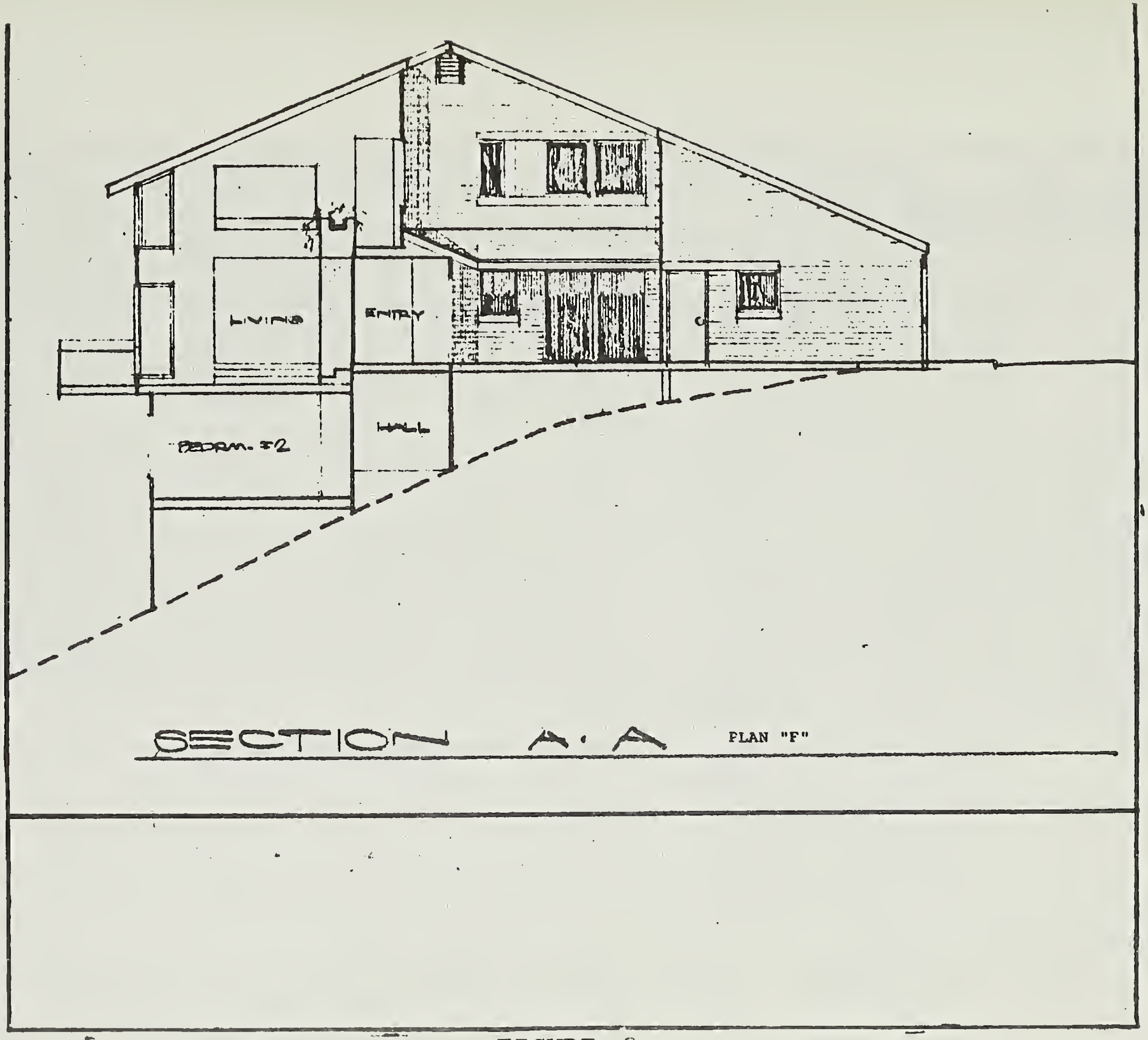
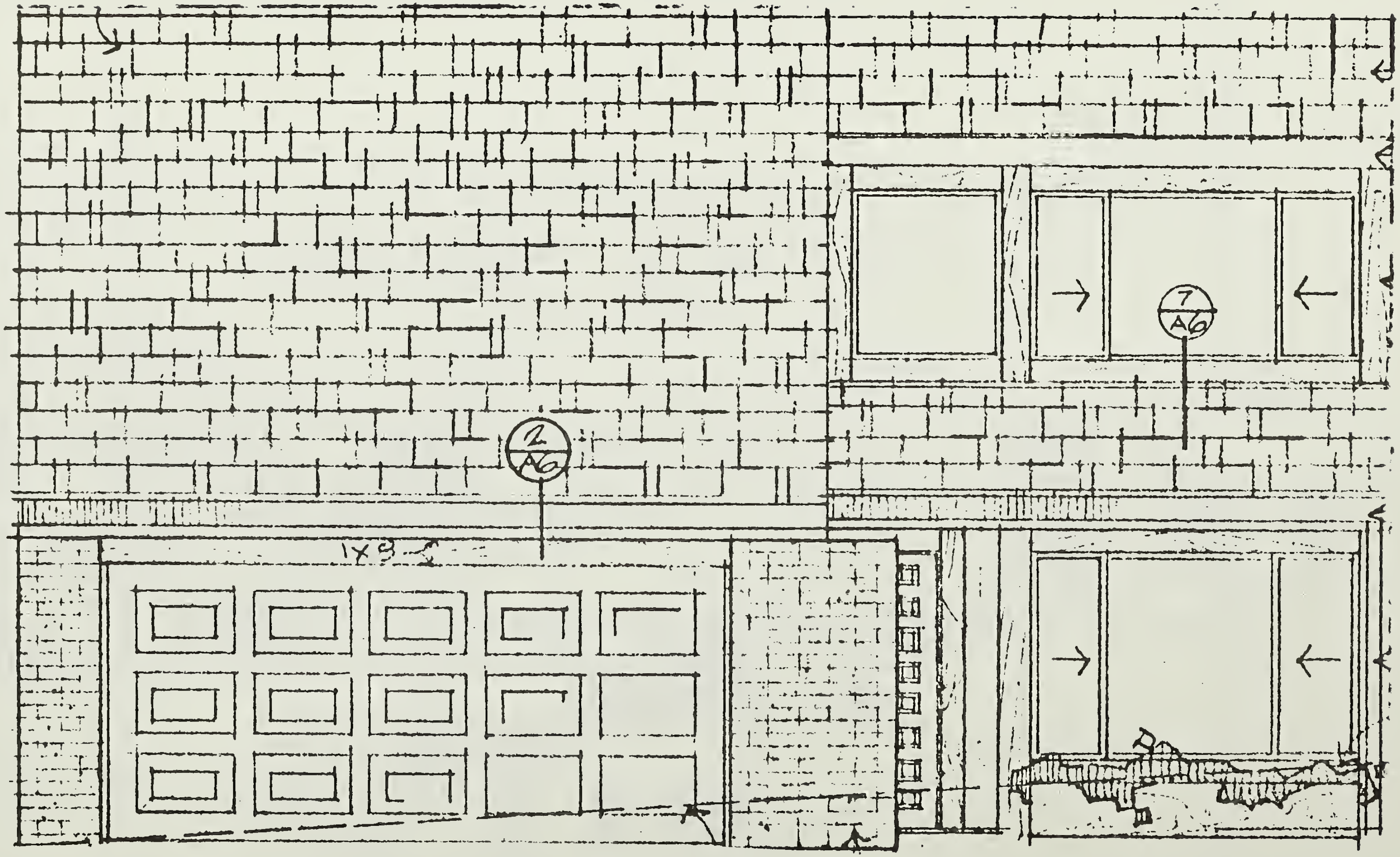
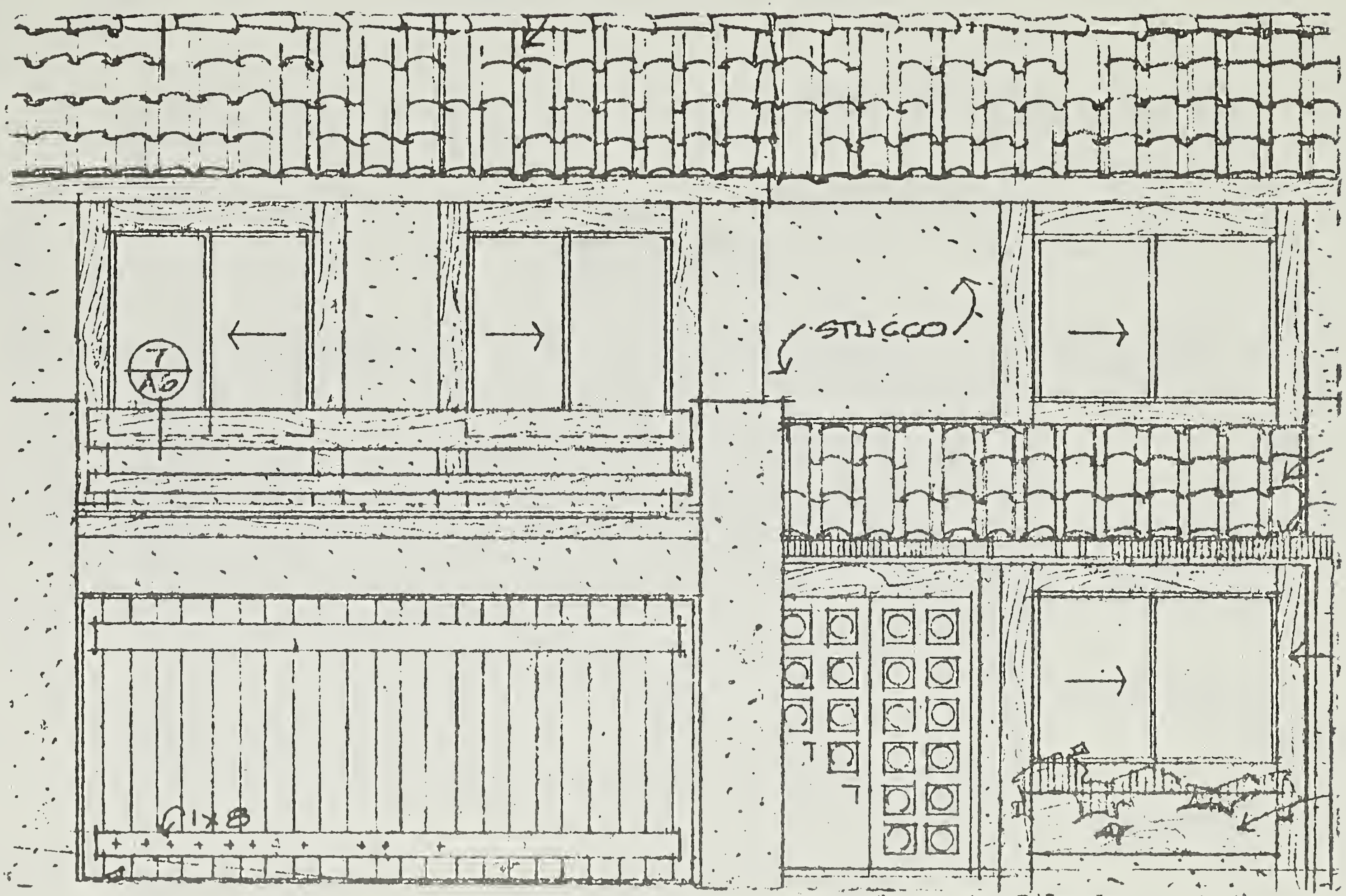


FIGURE 8



Plan G

FIGURE 9



Plan H

FIGURE 10

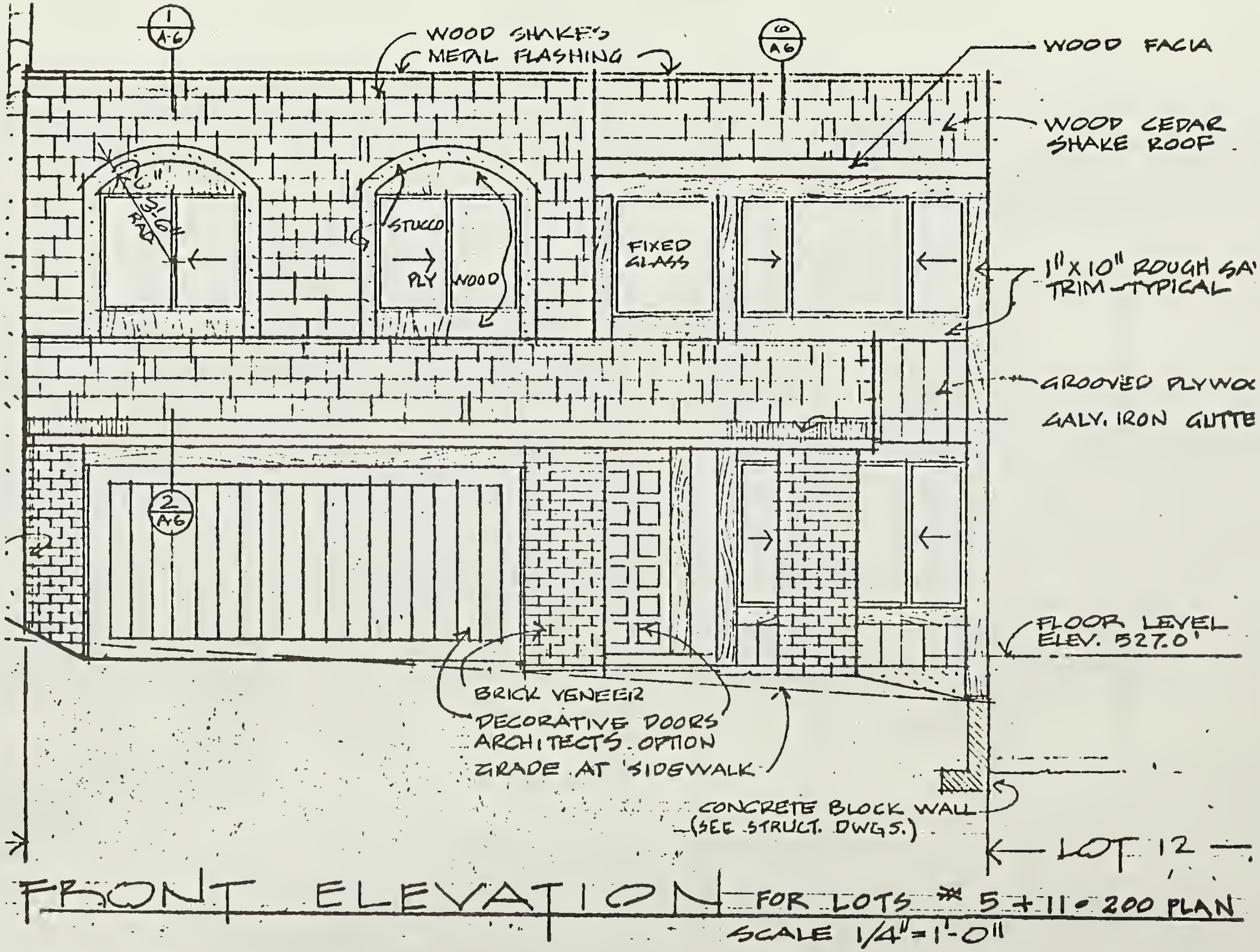


FIGURE 11 Plan H

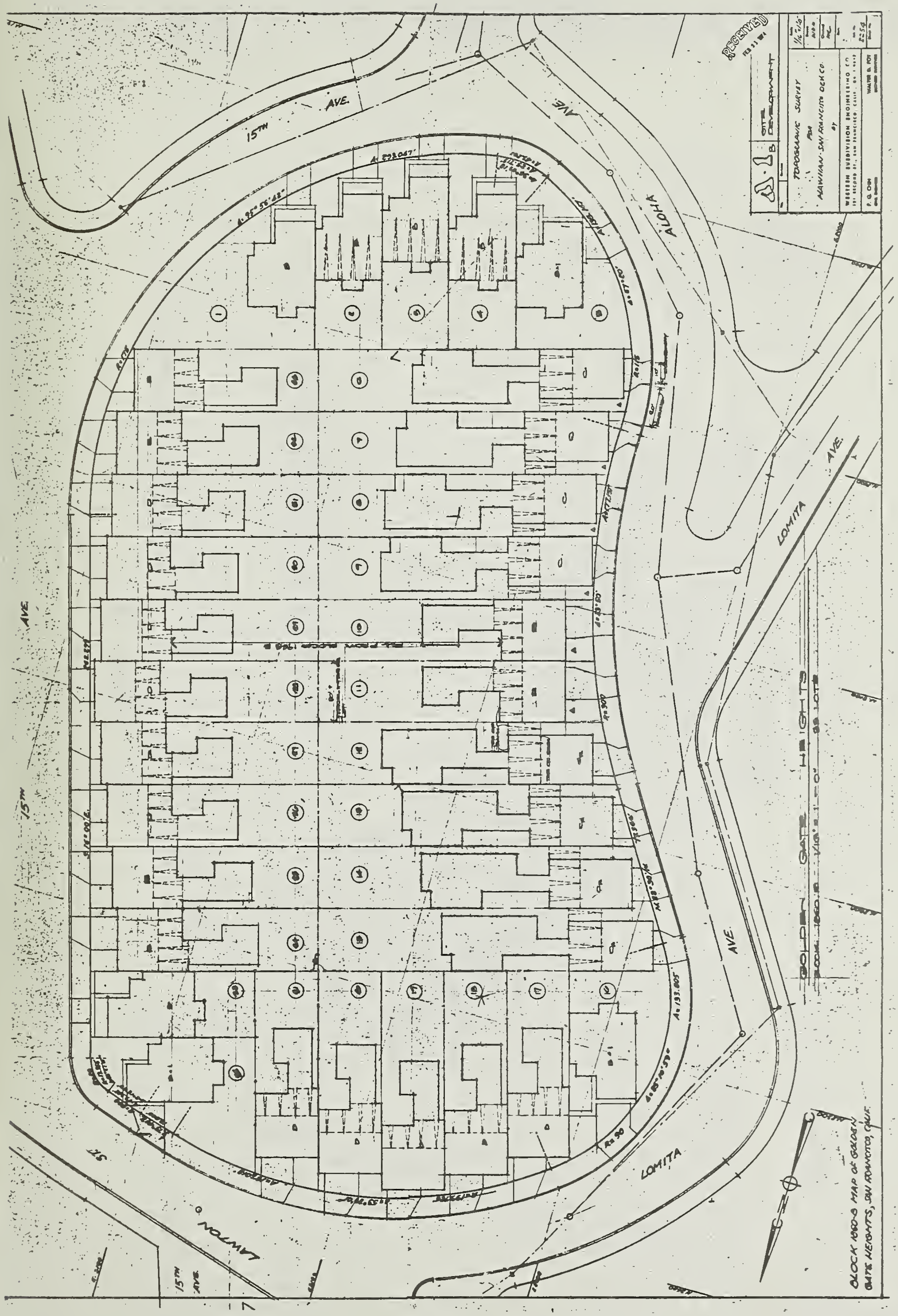

15TH AVE.
AVE
ALOHA
LOMITA AVE.
AVE.
LOMITA
LAWTON
15TH AVE
15TH AVE.
GOLDEN GATE HEIGHTS
TOPOGRAPHIC SURVEY FOR HAWAIIAN-SAN FRANCISCO DEV. CO.
RECEIVED
BLOCK 1860-S MAP OF GOLDEN GATE HEIGHTS, SAN FRANCISCO, CALIF.

FIGURE 12

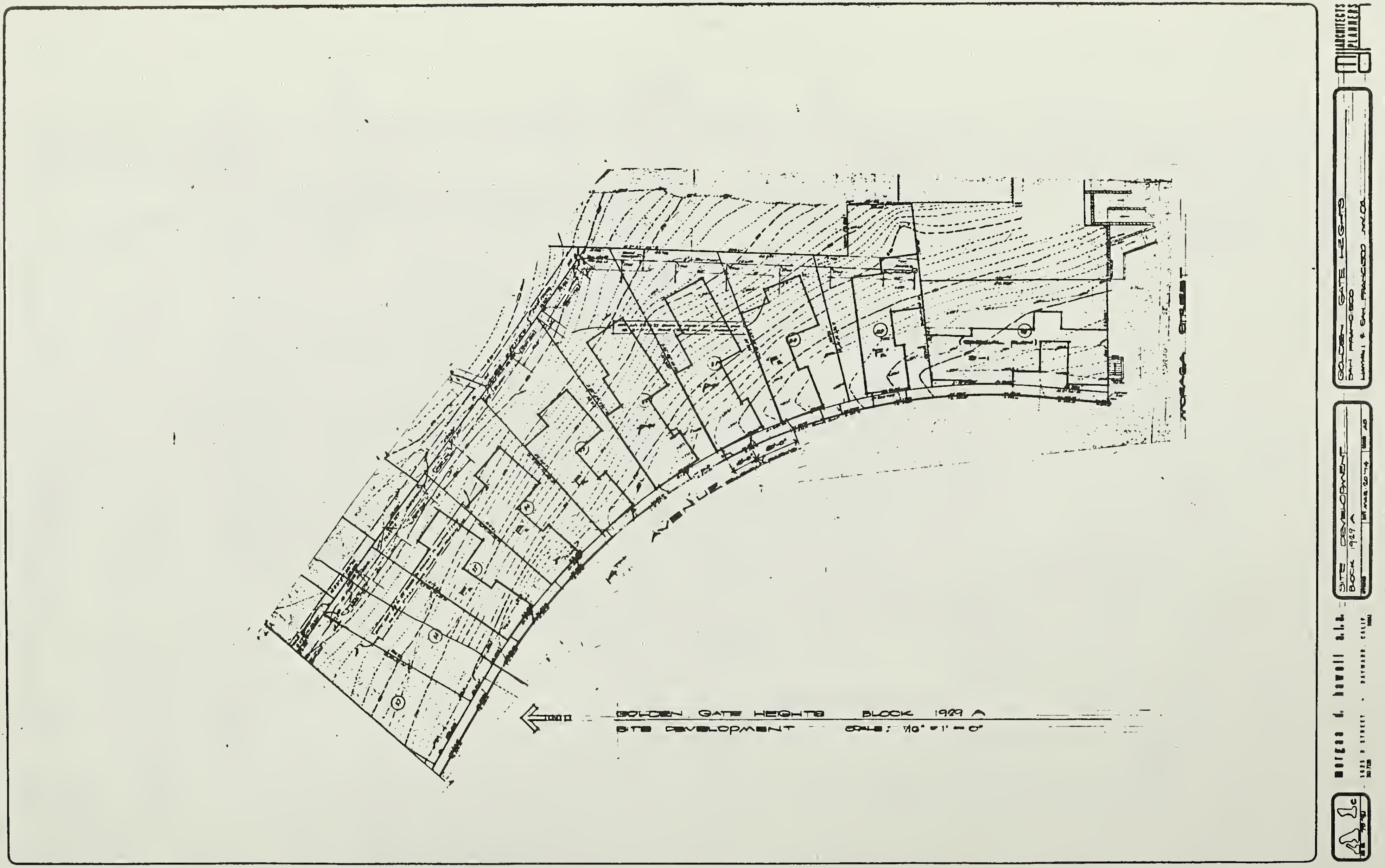

MORAGA STREET
AVENUE
GOLDEN GATE HEIGHTS BLOCK 1929 A
SITE DEVELOPMENT SCALE: 1/10" = 1'-0"
morgan d. howell a.i.a.
1025 B STREET · HAYWARD, CALIF.
SITE DEVELOPMENT
BLOCK 1929 A
MAR. 20 '74
GOLDEN GATE HEIGHTS
SAN FRANCISCO
ARCHITECTS PLANNERS

FIGURE 13

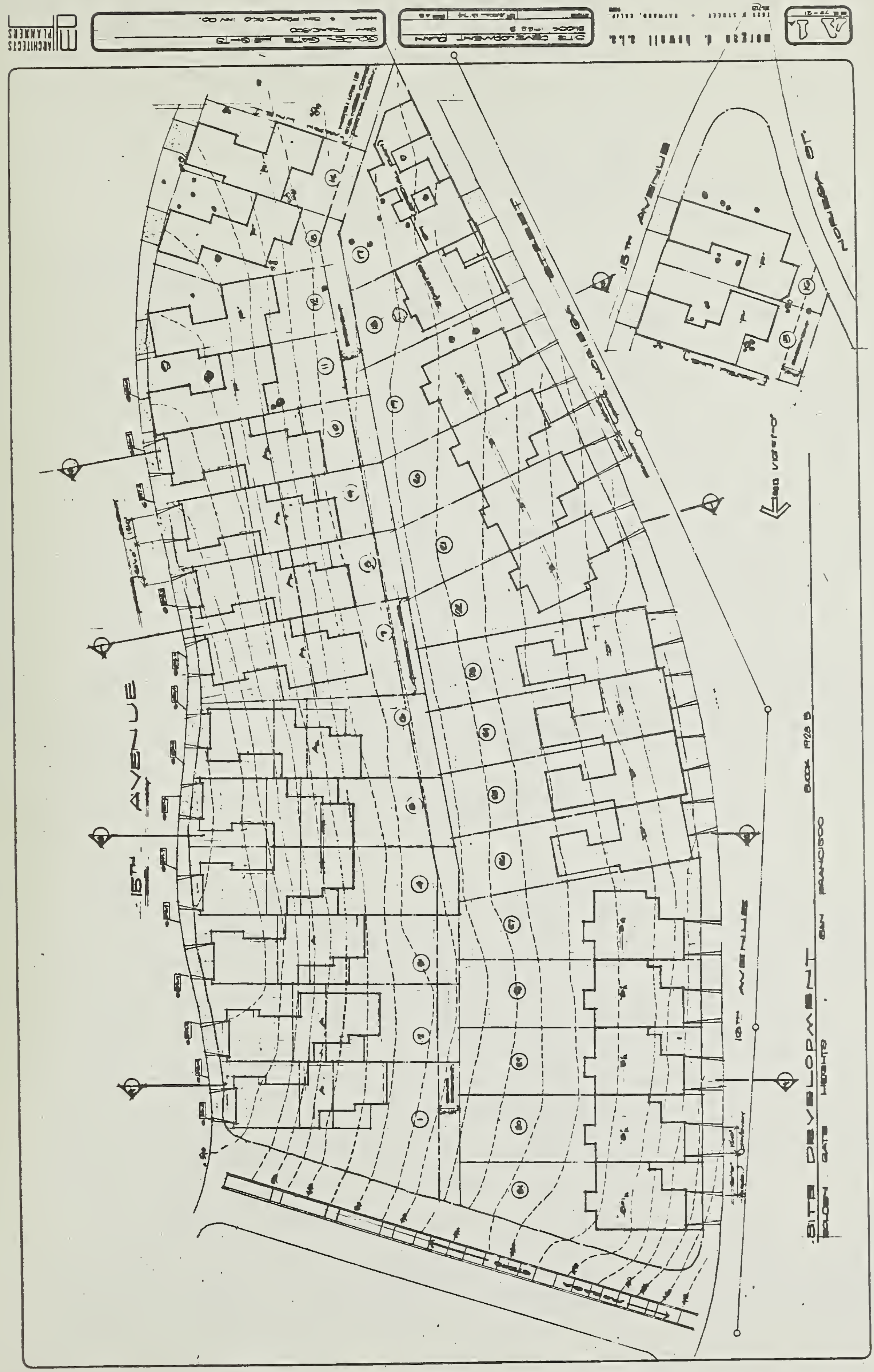

SITE DEVELOPMENT
GOLDEN GATE HEIGHTS
SAN FRANCISCO
BLOCK 1923 B
15TH AVENUE
16TH AVENUE
NORIEGA ST.
SITE DEVELOPMENT PLAN
BLOCK 1923 B
GOLDEN GATE HEIGHTS
SAN FRANCISCO
morgan d. howell a.i.a.
1025 A STREET · HAYWARD, CALIF
ARCHITECTS
PLANNERS

FIGURE 14

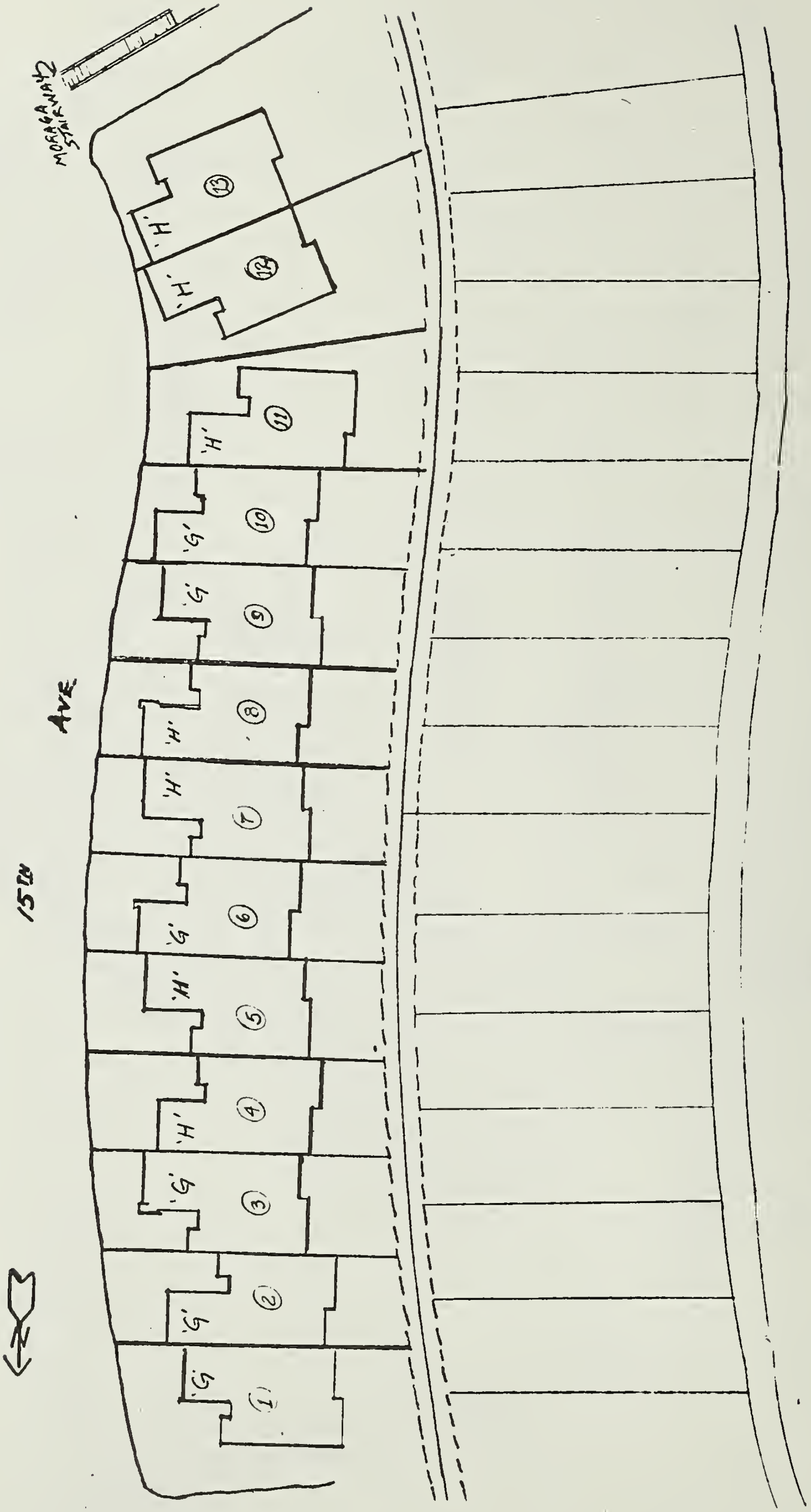


FIGURE 15
Block 1928

CHAPTER II

DESCRIPTION OF ENVIRONMENTAL SETTING

Topography

The City of San Francisco is located on a collection of hills which are a spur of the Pacific Coastal Mountain Range. Basically, the bedrock of this range known as the Franciscan Formation extends for hundreds of miles along the Oregon and California coast. The formation which may extend to depths of 50,000 feet is principally composed of shale, sandstone, and chert* Beds of clay, serpentine, and conglomerate are often found in the formation. This bedrock is overlain with surface deposits of dune sand, ravine fill, beach deposits, alluvium, landslide deposits, and artificial fill.

San Francisco's summits are in effect islands in a sea of sand. The sand was blown by sea wind, which forced it around rocky obstacles and up the seaward side of the higher hills. The highest sand dune is located at an elevation of over 600 feet, on the north-south ridge known as Golden Gate Heights near the location of the proposed project.

Three of the four Assessors' Blocks upon which development is proposed have the steep topographies typical of dune faces rising as much as 90 feet along their east-west axis from the street surface, while the fourth parcel is relatively flat and the hard chert bedrock is exposed as a result of extensive previous quarrying activitess.

The proposed development sites range in elevation from 460 feet to 540 feet above sea level.

Geologic

With the exception of a minor deposit of fill material near the 15th Avenue portion of Block 1928B, and the exposed chert bedrock found on Block 1860B, almost all of the proposed projects surface is of loosely compacted sand with varying amounts of silt and clay binder. Test borings completed by Jo Crosby and Associates, soil engineers, have indicated that where the chert is deep, the moisture content within the overlying sand tends to increase with depth. However, practically all of the sand encountered in the borings appeared to be loosely compacted. Deposits of sand are deepest at the lower proposed site elevations as the surface bedrock drops off steeply. A report, San Francisco Seismic Safety Investigation prepared by John A Blume & Associates for the San Francisco City Planning Department, places the site in an area of potential landsliding.

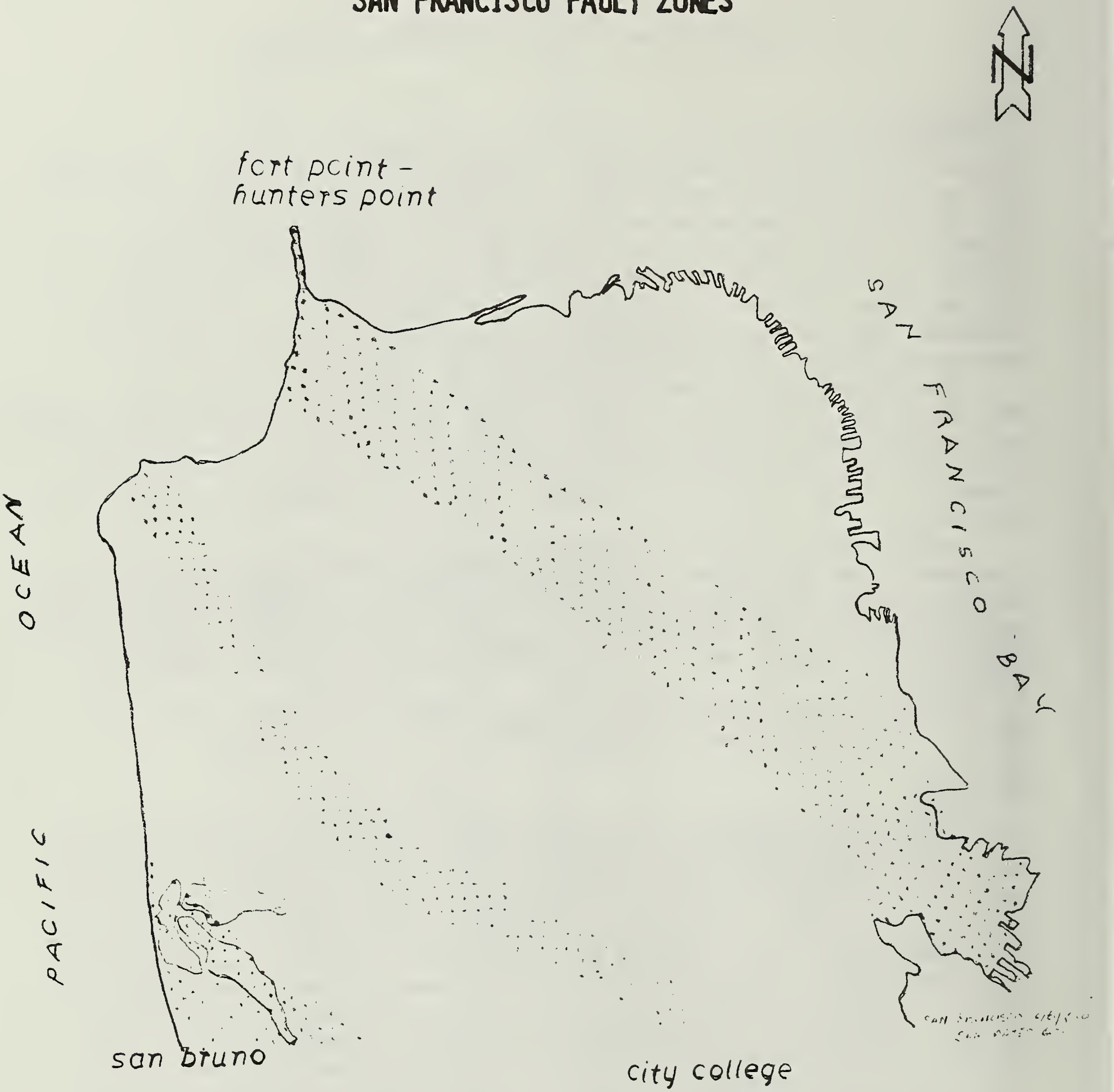
Basically, one active fault and three inactive faults trend northwesterly through San Francisco. As shown in Figure 16, the active fault is the San Andreas which lies in the ocean approximately

---

*Chert is a by-product of volcanic activity. It is a siliceous rock of chalcedonic or opaline silica which occurs in limestone.

FIGURE 16

SAN FRANCISCO FAULT ZONES



four miles from the proposed development. No part of this fault transects the land area of the city, however movement has occured along this fault several times in the past with devastating effects to areas of the city.

Of the area's three inactive faults* the City College fault is closest to the proposed development area. This fault, which passes within one mile of the proposed development site, trends northwesterly through San Francisco's City College and out near Seal Rocks and is exposed in ground surface in Franciscan rock near the campus, but is concealed beneath the dune sands north of the campus.

The remaining inactive faults in the area include the San Bruno, which lies in the Franciscan bedrock from 300 to 1500 feet beneath Lake Merced and the Ft. Point-Hunters Point, which extends from the city's Bay View district to Lands End and is evident only in limited Franciscan Formation outcrops along its' axis.

Air Quality

The proposed development site and the majority of the remaining areas of San Francisco enjoy relatively clean air as a result of climatic and topographic conditions and the absence of any significant upwind pollutors. Because of the city's nearness to the Golden Gate which affords the only sea level entrance through the coastal mountains into the interior, a relatively steady sweep of marine air with an annual mean rate of 9 mph prevents the accumulation of air pollutants and constantly replenishes the local air supply. However, air contaminants produced in the city are blown by the prevailing winds to other areas within the air basin contributing to one of the most serious air pollution problems in the nation. Although the majority of particulate emissions in the basin originate in the highly populated counties to the east and south of the Bay, San Francisco contributes approximately 12% of the total basin contaminant load.

Flora and Fauna

Although a densely populated area such as San Francisco presents a disturbed environment to plant and animal species, the city's remaining open spaces do present a wide range of relatively natural habitats for selected animal and plant species.

Flora

The California Academy of Sciences has identified seven rare or endangered plant species which may be found within the city limits. One of these species, the Dune Tansy, has been located within the proposed development site as the result of a survey conducted by Dr. Dennis Breedlove, Associate Curator of the Academy, during May, 1974 (see Appendix, p. 61)

The Dune Tansy, (Tanacetum Camphoratum) which was located within Assessors Block 1928B is a member of the Coastal Strand plant community which consists of twenty-four species.

The Dune Tansy is rare by virtue of the disappearance of the specialized habitat which it favors. Once the Tansy flourished among coastal dunes as few other species actively competed for existance in an environment characterized by high winds, poor moisture retention qualities of the native soils, and frequent salt water incursions. However, recent periods of rapid growth within the city and surrounding areas have generated intense construction pressures upon locations affording desirable habitats for this species.

---

*Inactive faults are those along which no movement is known to have occured in the last 10,000 years.

The Dune Tansy is of a family of plants closely related to the Sunflower. All of its' members are aromatic annuals or perennials and have dissected or fern-like leaves.

The plant is a dune stabalizing plant owing to its' extensive root system which often extends in excess of 35 feet in all directions. Dissemination of the species is accomplished both by airborne broadcast of its' seeds and through its' extensive root system. In addition to the Tansy, several plants native to the beach dune and bluff habitat of Central California are present on the proposed development site. These varieties of low groundcover form a soil stabilizing network where they appear. A list of these species appears below:

- Yarrow
- Pearly Everlasting
- California Acaena
- Sea-Pink
- Beach Sagewort
- Coyote Brush
- Dwarf Chapparral Broom
- Sand-Mat
- Sea Lettuce
- Sticky or Brush Monkey Flower
- California poppy
- Coast Buckwheat
- Beach Strawberry
- Blue Field Gilia
- Cudweed
- Mock Heather
- Deerweed
- Yellow Beach Lupine
- Lupine
- Blue Beach Lupine

In the southwest corner of Assessors Block 1928B a small grove of trees occurs. These trees, which are cypress, bay, and eucalyptus, and of various heights, are the only trees which appear within the proposed development area. A map, detailing the location, height, and species of these trees is available for inspection at the office of City Planning, 100 Larkin Street.

Fauna

Undomesticated birds and some terrestrial animals live and reproduce in the open areas of the city. Although some animals known to dwell in or visit the city are rarely sighted, none can be considered rare or endangered. The proposed development site does not appear to be a haven for any terrestrial animals although domesticated pets in the area do visit the site. Likewise, the site is visited from time to time by native birds.

Ground Water

Surface water or ponding is not likely over most of the proposed development site as the soil cover is highly absorbant and undaturated by the local water table. An exception to this assertion man be the flat parcel of land found on Assessors Block 1860B which has been stripped of most of its' soil cover as a result of previous quarrying activities leaving the bare non-absorbant chert exposed. Water which might collect on this parcel as well as water which is not absorbed by the native soils of the other parcels proposed for development drains toward the streets thence to the catchbasins of the city's combined sewer system.

Land Use

The entire proposed development site of approximately ten acres is situated within census tract 303 of the San Francisco-Oakland Standard Metropolitan Statistical Area (SMSA), as illustrated by Figure 17. This tract covers a land area of 330,48 acres which is less than 2.0% of the city's total land area. The predominant land use within this tract is residential with over one-half of its total area zoned for R-1 (One-family Residendial) use. Table 2, on page 25 illustrates the distribution of land throughout this census tract.

Population Characteristics

The 1970 population of census tract 303 was 8,579 persons. Average household size was found to be 2.5 persons, and typical family incomes were $13,485 annually. This compares to the city average family income of $10,503.

Service Delivery Systems

Water

Water for the proposed development would be gravity fed from the Stanford Heights reservoir which has a storage capacity of 11 million gallons. The average operating pressure in the area is 50 pounds per square inch (psi), which is also the average for the City.[1]

Police

San Francisco's Police Department is organized on a decentralized district station basis. The proposed development lies within the district served by the Taraval Station which is located at 24th and Taraval. Typical response time to calls within the proposed development is 3.0 minutes.[2]

Fire

Fire stations have been located throughout the city on the basis of population density. The area wherein the proposed development is located is considered a high density area by fire service standards and is served by three fire stations located at; 16th and Irving, 18th between Quintara and Rivera, and Clarendon and Olympia.

Additional backup capability is supplied by the station located at Stanyan and Parnassus, which houses a complement of 1 engine and 1 truck.

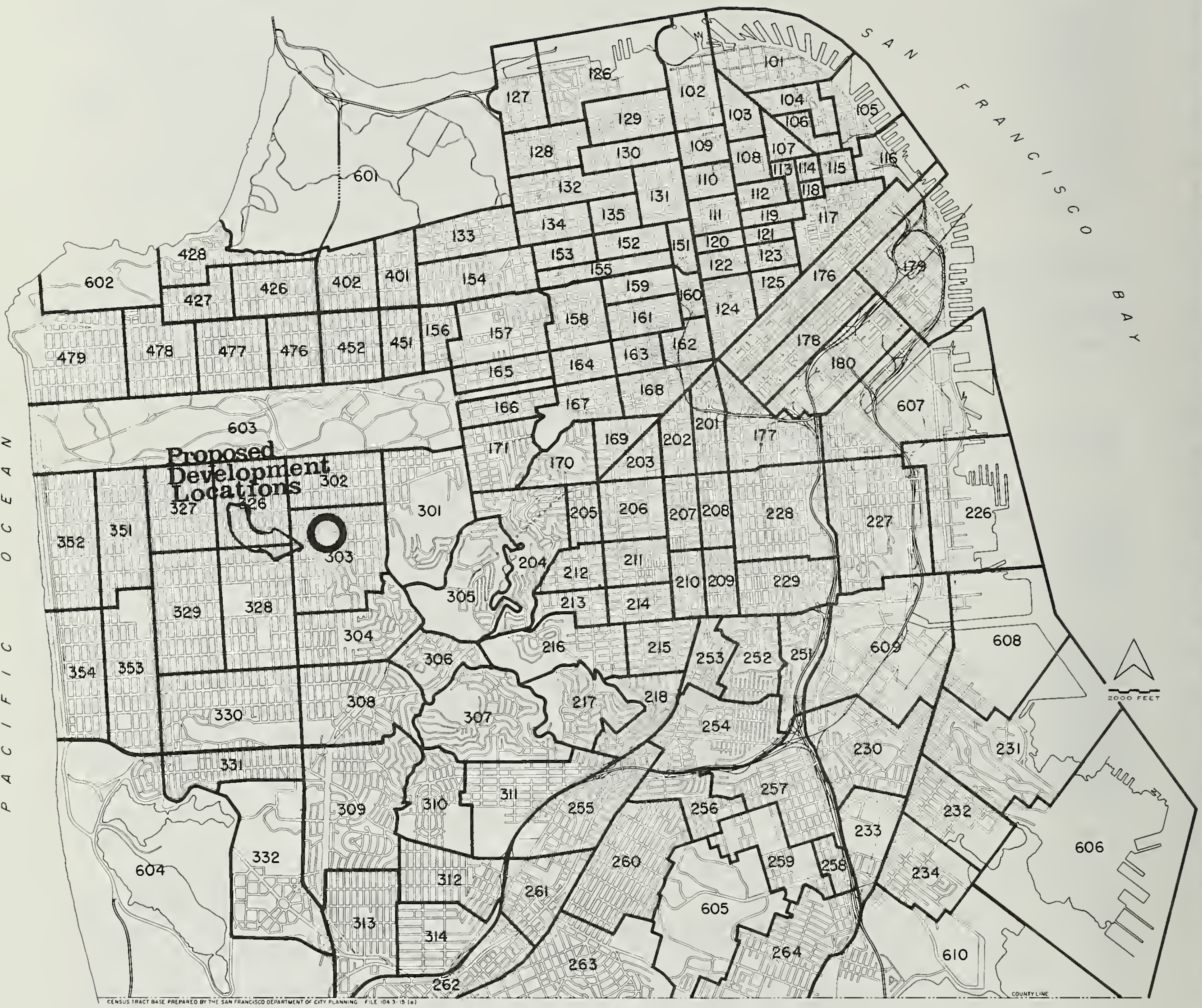
Typical response time to a fire in the proposed development

---

[1] Source: Telephone interview with John Medberry, San Francisco Water Department, 10/21/74

[2] Source: Police Facilities, San Francisco Department of City Planning, 1974

FIGURE 17



1970 CENSUS TRACTS

TABLE 2

Land Use Summary Census Tract 303

Zoned use	Acres currently in use	Vacant
R-1D	1.65	
R-1	152.02	19.86
R-2	49.98	1.03
R-3	15.91	.23
C-1	.90	
P	8.59	

Source: San Francisco Land Use Tabulation for 1970
San Francisco Department of City Planning

area is 4.5 minutes. A routine response would include a Chief, 1 ladder truck, and 3 fire engines.[1]

Except for the 500 gallons of water carried aboard each fire engine, reliance upon the domestic water supply system would be made in the event of a fire within the proposed development area since there are no Auxilliary Water Supply System cisterns within usable distance.

Transportation

Vehicular

San Francisco's trafficways system is composed predominantly of an unlimited access, surface street network. Arterials extend from the city's downtown to the neighborhoods connecting at several points with the city's limited access freeways, which serve to expedite traffic into, out of, and across the city.

Streets within neighborhoods have been developed in a grid pattern and connect to the arterials. Dominating topographical features tend to define the neighborhoods and the street patterns on the more rugged of these features are most often of irregular shape and length.

The proposed development would be located among the hills which dominate the Golden Gate Heights neighborhood. Street patterns in the immediate area of the development are irregular in shape and length. Additionall, they often intersect at steeply inclining or declining surface grades.

At the base of the hills (a maximum of 2 blocks from any point within the proposed development), the streets resume the grid pattern and are appreciably wider. Here, through routes are frequent as are connections with the arterials which serve the community. The major thoroughfares serving the community surrounding the proposed development include; Nineteenth Avenue, Lincoln Way, Taraval Street, and Seventh Avenue-Laguna Honda. The neighborhood is not served directly by any of San Francisco's limited access freeways.

Mass Transit

San Francisco's mass transit facilities are provided by a diversified surface system consisting of motor coaches, cable cars, trolley busses and streetcars, and by the sub-surface BART system. A majority of the city's mass transit routes enter downtown, however, some routes function as collectors connecting points within neighborhoods to downtown destined routes.

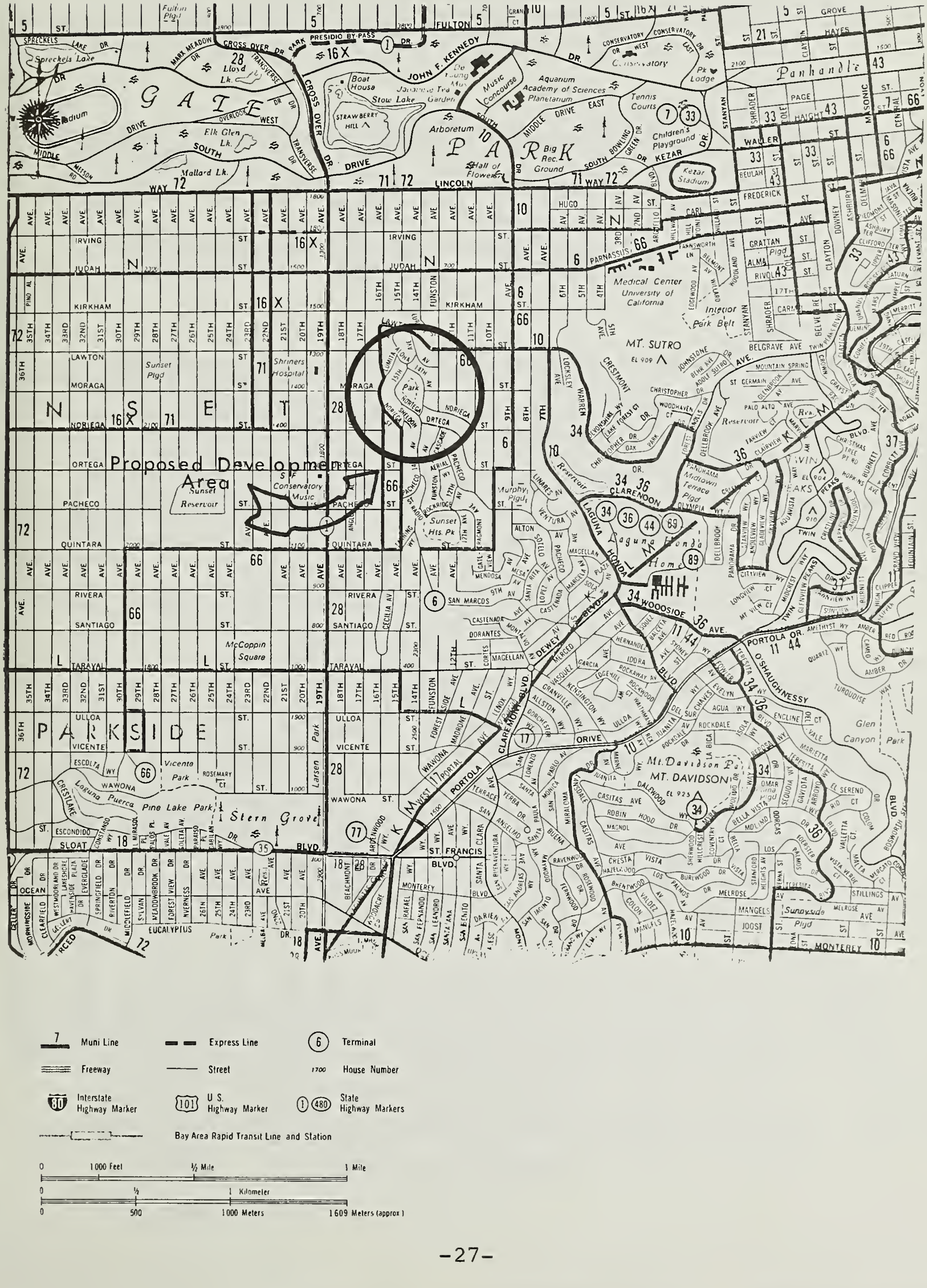
The proposed development is served by the #66 Quintara motor coach line, which makes several stops within the neighborhood and then proceeds downtown. Figure 18 illustrates neighborhood mass transit facilities. Also providing neighborhood service to downtown is the "N" Judah streetcar line, and the #6 Masonic motor coach line, while the #28 Nineteenth Avenue motor coach line

---

[1] Source: Telephone interview with Cheif Gautier, San Francisco Fire Department, 5/30/74

FIGURE 18

AREA MASS TRANSIT ROUTES



provides cross-town transportation. Headways on the #66 Quintara line are 13 minutes during the A.M. peak (7 A.M. to 9 A.M.), 15 minutes during the day (between 9 A.M. and 4 P.M.), 12 minutes during the P.M. peak (4 P.M. to 6 P.M.), and 30 minutes during the night (7 P.M. to 7 A.M.). Capacities for the lines are 945 passengers during the A.M. peak and 1,050 passengers for the evening peak.[1]

Transit Preferential Streets

San Francisco's Board of Supervisors has adopted an ordinance recommended and developed by the Planning Commission designating certain trafficways as Transit Preferential Streets. This designation provides for a system of restricted parking and establishment of lanes for the exclusive use of mass transit particularly during the A.M. and P.M. peak movement hours. Transit preferential streets serving the proposed development area are; Judah Street, and Seventh Avenue.

Bicycle Routes

In order to provide for the use of the bicycle as a viable alternative means of transportation, in addition to its' recreational value, some city streets have been designated and marked as bicycle routes. Existing bicycle routes serving the proposed development area are; Irving and Judah Streets, while Parnassus and Seventh Avenue-Laguna Honda are proposed for future improvement and designation as bicycle routes. Figure 19 locates the areas' special use trafficways.

Other Special Use Trafficways

There are no recreational or pedestrian walkway streets in or known to be proposed within the proposed development area.

Recreation and Open Space

The city's Department of Recreation and Parks maintains many facilities throughout the city. These facilities range from world famous Golded Gate Park , which is the city's major open space area, to neighborhood playgrounds, tennis courts, and mini-parks. Within close proximity to the proposed development location is Grand View Park, a medium-sized park of 1.1 acres, which affords magnificent views of the entire city. This park has been proposed for expansion by the Recreation element of the city's Comprehensive Plan however the proposed expansion does not involve any lands of the proposed development.

Schools

The San Francisco Unified School District, in compliance with court-ordered desegregation of the city's public schools, operates an extensive bussing program. As a result, students from all over the city are bussed within certain grades to schools outside their immediate neighborhoods. Consequently, average daily population figures for a given school do not reflect the densities of school-

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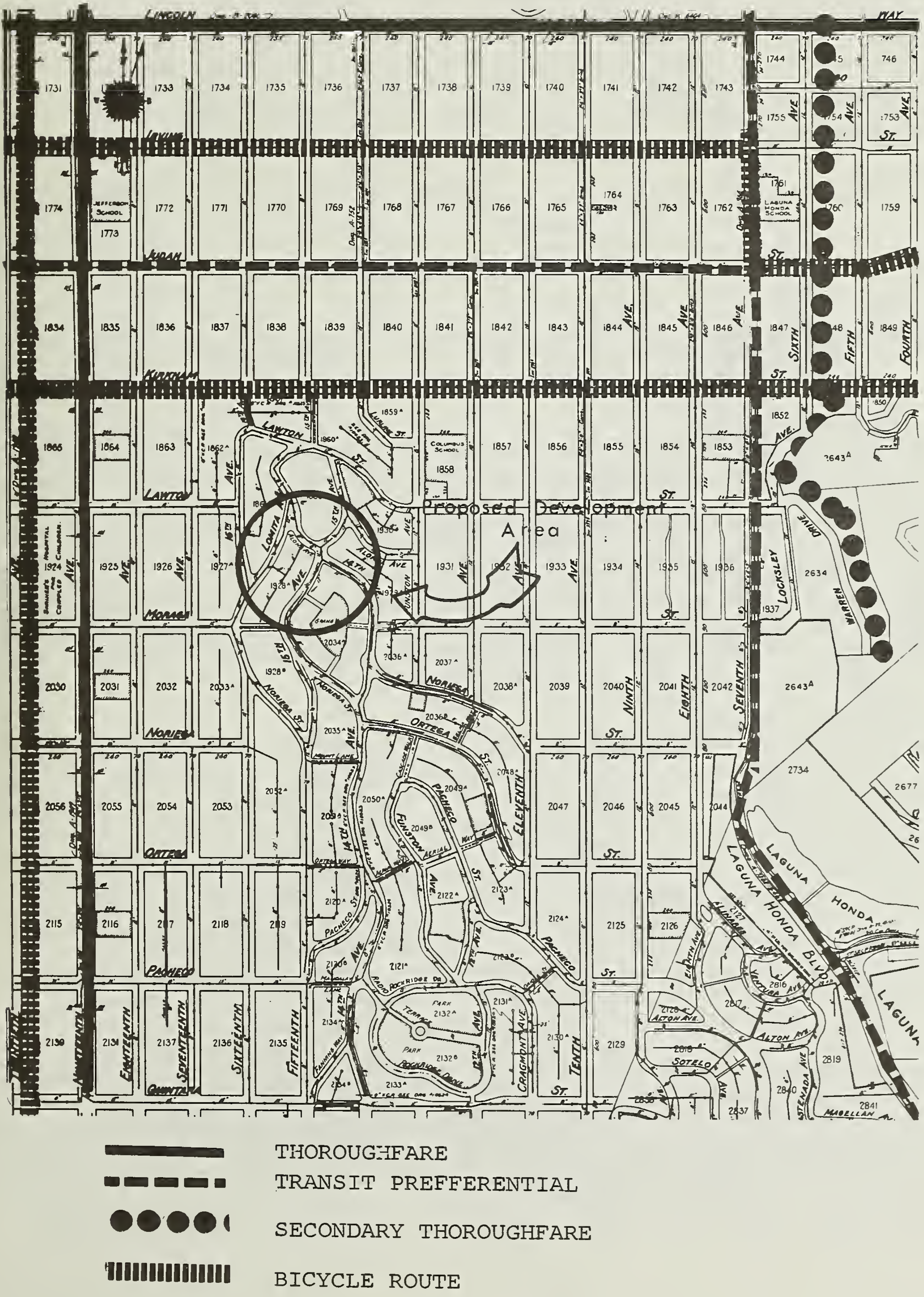
[1] Source: Telephone interview with Mr. Tom Standing, Transit Planner, Municipal Railway (October 2, 1974)

FIGURE 19


Proposed Development Area
LINCOLN WAY
IRVING
JUDAH
KIRKHAM
LAWTON
MORAGA
NORIEGA
ORTEGA
PACHECO
QUINTARA
LOMITA AVE.
ALOHA AVE.
FUNSTON AVE.
NINTH
EIGHTH
SEVENTH
SIXTH AVE.
FIFTH AVE.
FOURTH
ELEVENTH
TENTH
FIFTEENTH
SIXTEENTH
SEVENTEENTH
EIGHTEENTH
NINETEENTH
LOCKSLEY
WARREN DRIVE
LAGUNA HONDA BLVD.
JEFFERSON SCHOOL
LAGUNA HONDA SCHOOL
COLUMBUS SCHOOL
ROCKRIDGE DR.
CRAGMONT AVE.
ALTON AVE.
SOTELO
MAGELLAN
▬▬▬ THOROUGHFARE
▬ ▬ ▬ ▬ ▬ TRANSIT PREFFERENTIAL
● ● ● ● SECONDARY THOROUGHFARE
▮▮▮▮▮▮▮▮ BICYCLE ROUTE

age children residing in the area.

The probable school assignments for students residing in the proposed development are as follows:

Kindergarten thru Grade Three (K-3)	Bussed
Grades Four thru Six	Columbus Elementary
Junior High (7-9)	Herbert Hoover Jr.
High School (10-12)	Lincoln or McAteer High

Locations of these facilities and current enrollments are displayed below.

Facility	Location	Current Enrollment	Capacity
Hoover	2290 14th Avenue	1350	1666
Lincoln	24th & Quintara	1800	3114
McAteer	555 Portola	1700	2569
Columbus	1451 12th Avenue	230	360
Jefferson	1725 Irving	441	540

Source: Telephone interview with Mr. Clay, San Francisco Unified School District, 5/30/74

Waste Disposal (solid)

The City and County of San Francisco contracts for the collection and disposal of domestic solid waste through the office of the Director of Public Works. The Director reviews the operations of competing privately owned scavanger companies and approves a rate they may charge individual citizens of the city and county for collection and disposal of their waste.

Currently, the Sunset Scavenger Company has been authorized to operate within the proposed development area. Refuse collected by the Sunset Scavenger Company is disposed of at the Mountain View landfill operation located in Santa Clara County.

Waste Disposal (liquid)

San Francisco collects its domestic, industrial, and storm run-off wastewater in a combined sewer system, and treats them at three sewage treatment plants situated along the periphery of the city. These plants, each of which serves the drainage basin wherein it is located, are illustrated by Figure 20.

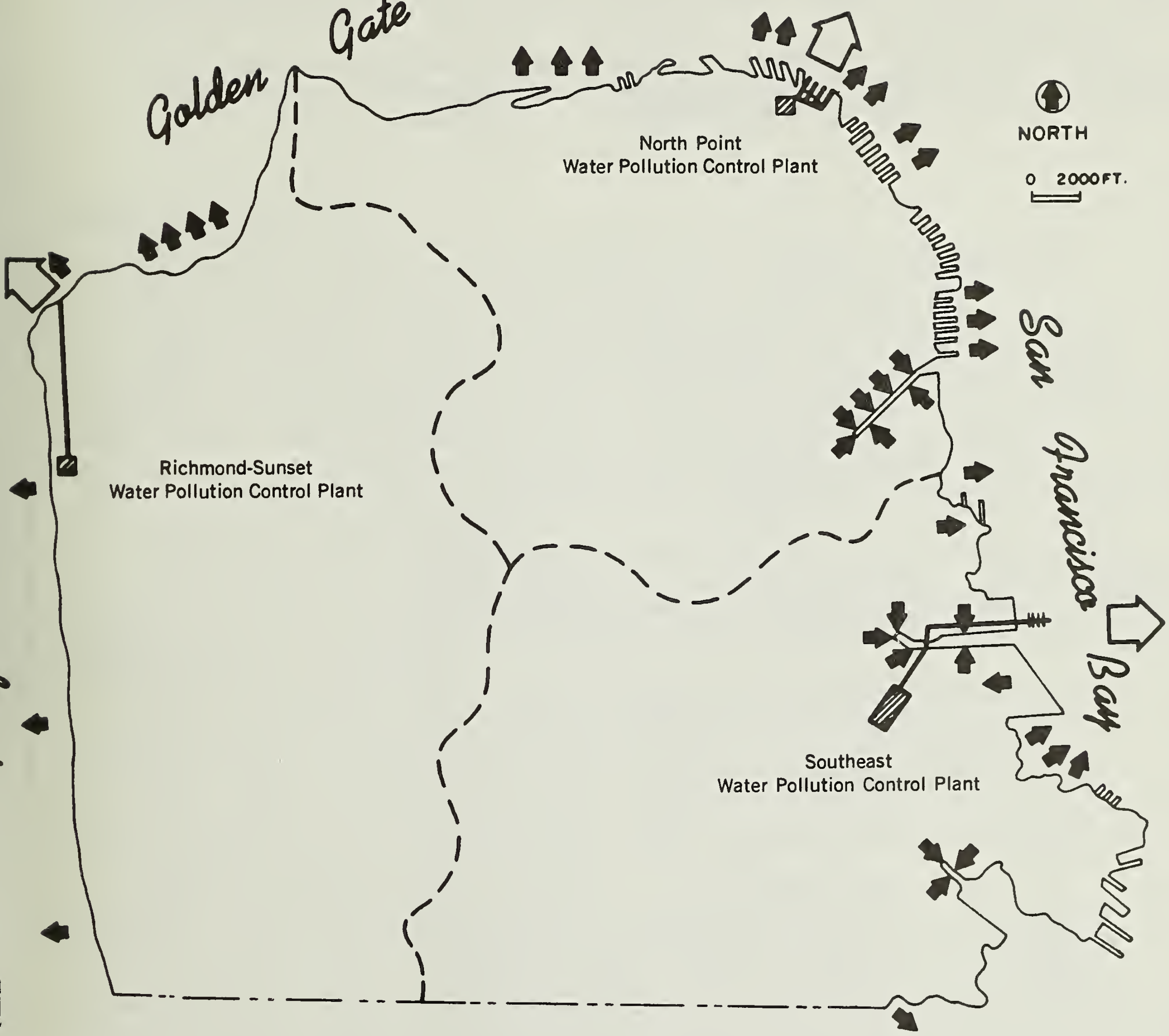
Presently, during dry periods, all wastewater is collected and treated at the three treatment plants. When rainfall more intense than 0.02 inches per hour over the city occur, a storm run-off is produced which exceeds the system's 340 MGD treatment capacity. This excess lasts for a total duration of 210 hrs/yr. During these periods the plants treat approximately 60% of the total wastewater flow, however that portion of the combined flow which is not treated results in large amounts of bacteria, grease, and untreated human wastes being deposited along the shoreline particularly in the beach areas of the city.

These overflows which occur approximately 80 times per year are responsible for adverse water quality conditions which render the beach areas of the city unfit for human water contact activities during most of the winter months.

Currently, the city under the weight of several Case and Desist

FIGURE 20

EXISTING TREATMENT FACILITIES


Golden Gate
North Point
Water Pollution Control Plant
NORTH
0 2000FT.
San Francisco Bay
Richmond-Sunset
Water Pollution Control Plant
Southeast
Water Pollution Control Plant

The existing three treatment plants (North Point, Southeast, and Richmond-Sunset) provide primary treatment with chemical addition and discharge through the outfalls shown on the map. Located around the perimeter of the City are solid arrows representing the existing 41 bypass locations. At these points a combination of untreated domestic wastewater and stormwater overflows into the Bay and Ocean when rainfall exceeds 0.02 inches per hour. Overflows occur approximately 80 times per year.

Orders issued by the Regional Water Quality Control Board (RWQCB), has developed a master plan for expanding treatment facilities, which when completed will limit storm overflows to approximately eight occurances a year. This project is expected to require twenty years to complete.

Domestic and storm run-off flows likely to be produced as a result of the proposed development will be treated at the city's Richmond-Sunset water pollution control facility.

CHAPTER III

ENVIRONMENTAL IMPACTS LIKELY TO OCCUR IF THE PROPOSED PROJECT IS UNDERTAKEN

Basis for Calculation

In order to calculate the problematic effects the proposed development may have upon the environment, certain assumptions relative to the anticipated population have been made.

These assumptions have been based upon the financial status most likely to be enjoyed by qualified buyers and characteristics reflected by purchasers of similar homes in a development recently completed by UC Development Company on the lower slope of Assessors Block 1928A. These three and four bedroom homes which are very similar in architecture to those of the proposed development, although slightly smaller, have been marketed for $78,000 to $82,500, dependent upon the model selected.

Profiles of the purchasers to date reflect: An average family size of 4.5 persons, annual family incomes of $35,000+, typical down-payments of $20,000, and mortgage payments ranging from $650 to $800. Average ages of the children could not be established, however, both adults typically worked*

This family profile is not in conflict with the surrounding community. Although recent census data reflects family income levels generally regarded as middle income ($13,485 annually), allowances must be made for a significant single population within the tract living on fixed incomes. Making allowances for these persons leads to the inference that many resident wage earners are upper-middle-class to well-to-do.

Recent selling prices of the new and used housing in the immediate area of the proposed development have been in excess of $80,000. A typical down payment for such a purchase would equal $16,000 (20%), and a 30 year mortgage (if available, would require payments of $650 monthly. Lending institutions would most likely require annual family incomes of $25,000 to $35,000 to support such loans. Probable impact calculations assume that the typical purchaser of a home within the proposed development will display similar financial and family composition characteristics. In summary, the probable composition of the typical family likely to purchase a home in the proposed development will be composed of 4.5 members, two of whom will work and earn an annual income of $35,000, and the statistical 2.5 children per household will attend public schools.

Following are the impacts which could reasonably be anticipated to occur should the proposed development be completed.

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*Source: Telephone interview with Mr. McCormic, U/C Realtors 5/30/74

Seismic

The impact of the development associated with seismic response involves both risk to human life and risk of property damage. The greatest danger to human life during an earthquake is that of being struck by moving objects dislodged by ground shaking. Stationary objects easily dislodged would probably be relatively small and would not effect as severe an injury as would larger objects which are normally not stationary such as structural materials of the building. History has shown that generally, small woodframe buildings with many partitions such as those proposed for the development have good resistance to total collapse during an earthquake (See The Blume Report p.62).

The Blume Report (See Figure 3) estimates the intensity of future ground shaking for most of the site to be weak. This may be due to the shock absorbing properties of dune sand when located in proximity to bedrock which, in this case, is undifferentiated Franciscan group rocks identified in the Blume report as having "generally high stability" during an earthquake (Blume report Figure 1). An area which has an estimated intensity of future ground shaking of "very high" is located by the Blume report within about one block downhill of all parcels in the development.

Geologic hazards associated with earthquakes such as liquefaction and landsliding are the greatest threat to property damage in the proposed project. Except for Assessor's Block 1860B, the surface soils of the entire site is composed of dune sand which is characterized by the Blume report as having "moderate to high stability except for local liquefaction potential" (See Blume report Figure 1). The Blume report identifies the area of the site as being an area of potential landslide hazard. This is due to the steepness of the slope overlain by sand. The potential of the project relative to this condition is that it could increase the vertical load on the slope, increasing the chance of gradual creep or of a full slide in the event of an earthquake.

The Foundation Investigation dated 8-25-71 for Block 1928B conducted by Jo Crosby & Associates, states that the soil conditions on Lots 14 through 32 "are particularly sensitive to seismic loadings which may, under certain magnitudes and conditions, create large scale failures within wet sands underlain by shales" (see Appendix, p. 71). A follow-up report dated 1-4-72 concluded that "the site material should react well under all but moderate to severe earthquake conditions (see Appendix, p. 90).

Land Forms

The four Assessor's Blocks upon which the proposed development is to be constructed display two vastly different topographies (see Figure 3). Blocks 1929A, 1928, and 1928B are situated upon steep slopes which rise rapidly from the street surface, while Block 1860B is relatevely flat and the site of an abandoned quarry operation. Some alteration to existing land forms will be required.

Those sites which are on the downhill side of Block 1928B and the entire surface of Block 1860B are to be excavated, leveled, filled and recompacted.

This activity will necessitate the reduction and covering of exposed bedrock outcroppings on Block 1860B, however, little or no alteration to the bedrock will occur elsewhere within the proposed development area as the surface soil depth extends to depths of fifty feet across the lower slopes. No blasting will be required to reduce the outcrops. Figures 21 and 22 are grading plans of the proposed development.

Homes to be constructed upon the up-slope locations within the proposed development will utilize either spread footings or piers for structural support. These footings will be constructed by drilling through the sandy soil to the bedrock and then casting through the bore the pier, or cassion (see Appenxix, p. 91).

There are two alternative foundation procedures available for the lots fronting on the northeast side of Noriega: pier and beam foundations or normal foundations placed on a substantial thickness of recompacted site soils (see Appendix, p. 91). A report, entitled Stability Study for Portions of Block 1928B, by Jo Crosby & Associates, dated January 4, 1972, recommends that the latter of these methods be used. This would involve considerable excavation and recompacting and ultimately result in a land form with abrupt topographical changes requiring retaining walls. Building these walls would also require excavation.

Erosion

The preparation of all sites involved in the proposed development require the removal of all native vegetation except the trees located on Assessors Block 1928B (see Appendix, p. 96). Currently, this ground cover which is composed of species uniquely suited to the rather hostile environment afforded plant life by the site, limits the effects of water and wind erosion by virtue of extensive root networks which absorb excess moisture and tightly bind the native sand in place. Removal of this cover will render the site temporarily more susceptible to the erosive effects of wind and water.

Plant Life

A small grove of trees exists at the southern tip of Assessor's Block 1928B. If this portion of the site is eventually built upon, it would be so designed in respect to siting of houses, to building of piers and to grading that none of the trees would be destroyed. There are several trees in this grove which are in the street right-of-way between the curb and the private property line. The distance between the property line and the curb is great enough at that point that the City would be able to design a sidewalk around these trees and save them as well.

With the exception of this grove of trees, the existing vegetation on all the blocks associated with this development would be removed completely.

Rare or Endangered Plant Species and/or Communities

As previously discussed at length in the Environmental Setting portion of this report (Chapter II), one plant species currently dwelling upon the site of the proposed development, is considered rare and endangered. This is the "Dune Tansy." As site preparation procedures include the removal of all native vegetation, this plant species/community would be destroyed.

GRADING PLAN
BLOCK 1928B

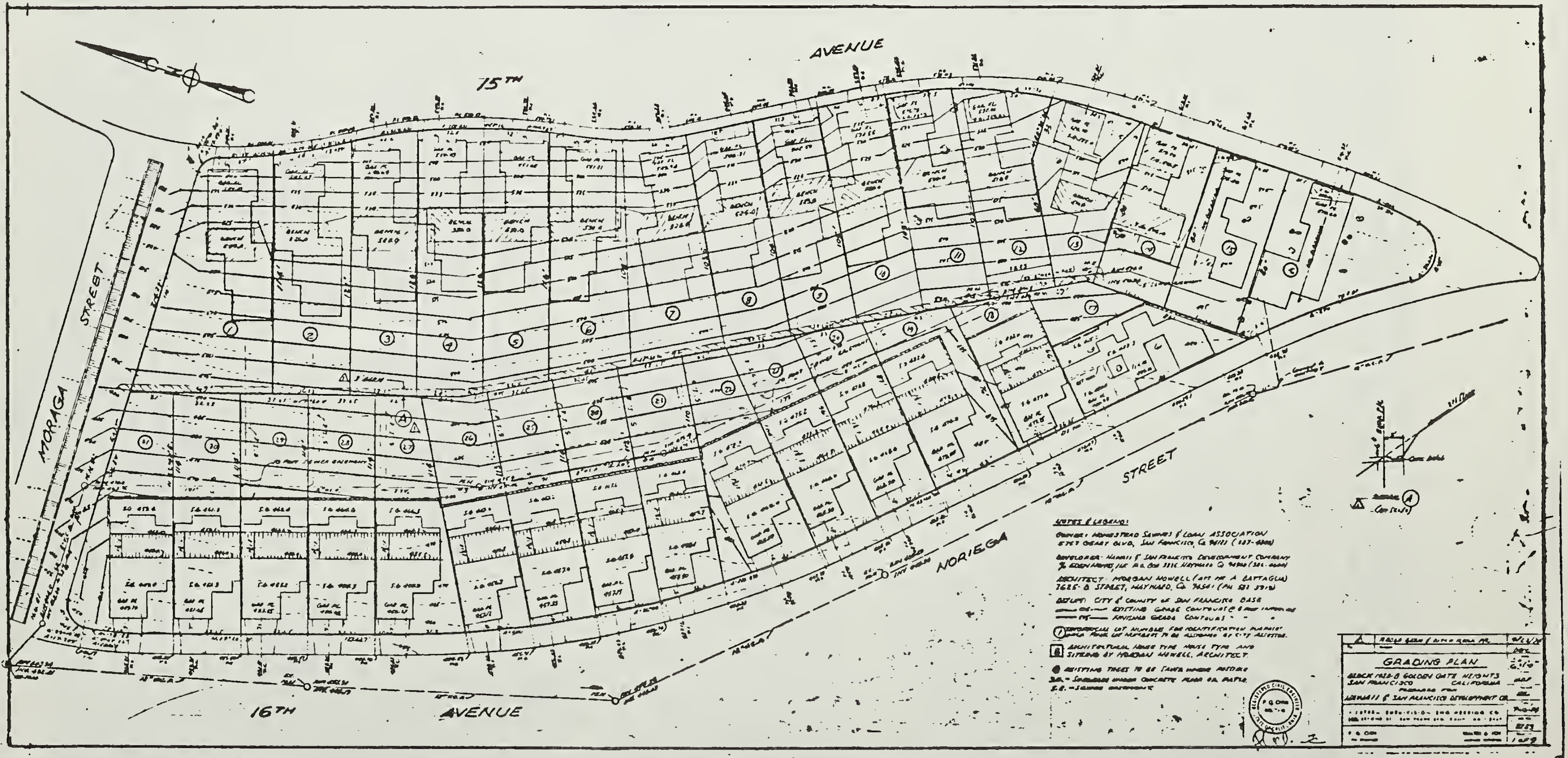
15TH AVENUE
MORAGA STREET
NORIEGA STREET
16TH AVENUE
NOTES & LEGEND:
OWNER: HOMESTEAD SAVINGS & LOAN ASSOCIATION
5757 GEARY BLVD, SAN FRANCISCO, CA 94121
DEVELOPER: HAWAII & SAN FRANCISCO DEVELOPMENT COMPANY
ARCHITECT: MORGAN HOWELL
7625 B STREET, HAYWARD, CA 94541
DATUM: CITY & COUNTY OF SAN FRANCISCO BASE
EXISTING GRADE CONTOURS
REVISED GRADE CONTOURS
ARCHITECTURAL HOUSE TYPE AND SITEING BY MORGAN HOWELL, ARCHITECT.
GRADING PLAN
BLOCK 1928-B GOLDEN GATE HEIGHTS
SAN FRANCISCO CALIFORNIA
PREPARED FOR
HAWAII & SAN FRANCISCO DEVELOPMENT CO.
1 of 9

FIGURE 21

GRADING PLAN

BLOCK 1860B

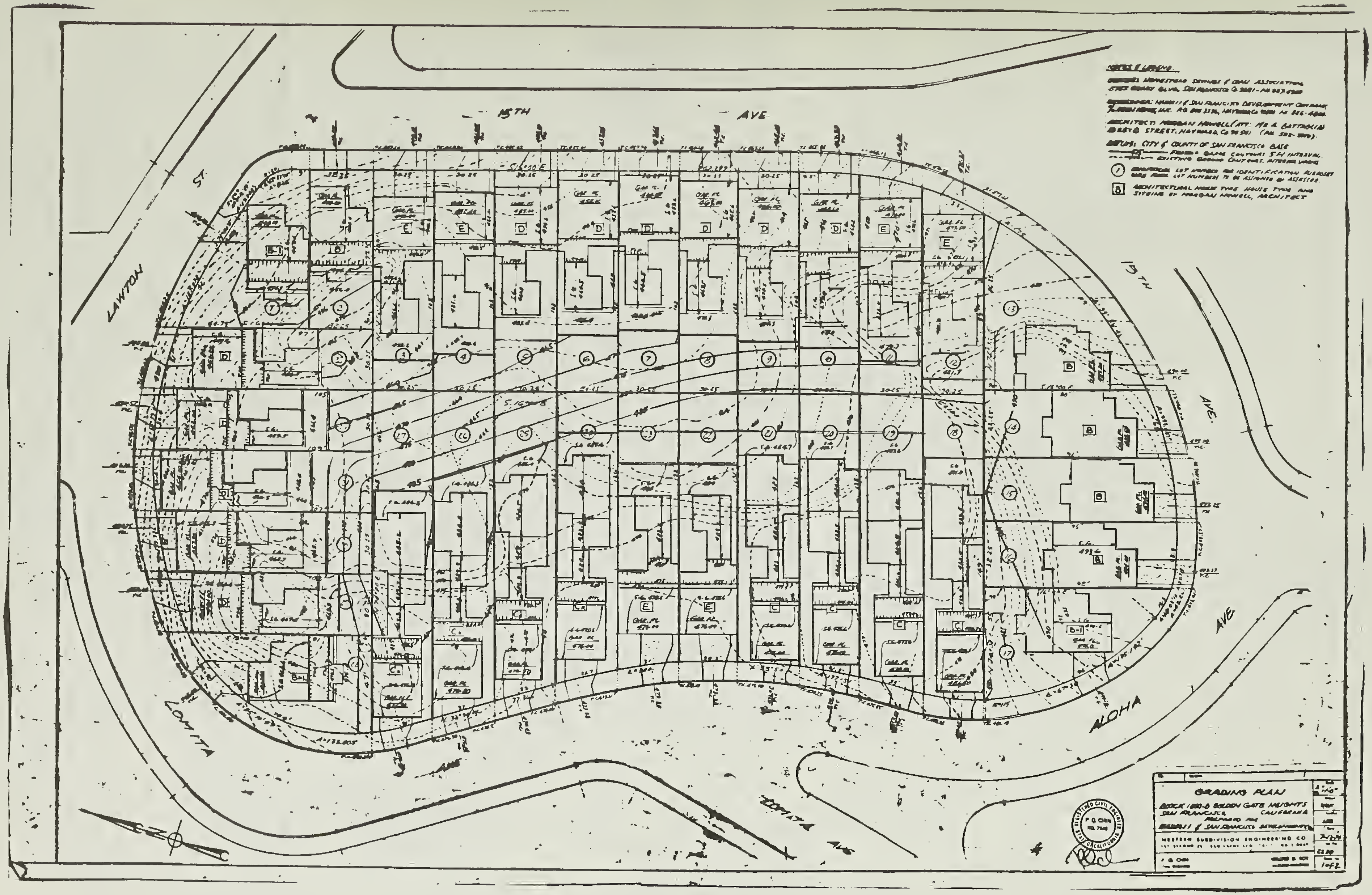
15TH AVE.
LAWTON ST.
LOMITA
LOMITA AVE
ALOHA AVE
15TH AVE.
CITY & COUNTY OF SAN FRANCISCO BASE
EXISTING GROUND CONTOURS
ARCHITECTURAL HOUSE TYPE HOUSE TYPE AND SITEING BY MORGAN HOWELL, ARCHITECT
GRADING PLAN
BLOCK 1860-B GOLDEN GATE HEIGHTS
SAN FRANCISCO CALIFORNIA
SAN FRANCISCO
WESTERN SUBDIVISION ENGINEERING CO
1 of 2

FIGURE 22

Dr. Elizabeth McClintock of the California Academy of Sciences has indicated that this impact would not be mitigated by transplanting the Dune Tansy to another location becuase Tansys do exist elsewhere in the few small habitats providing the unique environment required by them. Adding a few individuals to existing communities is meaningless since the existing communities are capable of reproducing within the limits proscribed by their habitat. The important fact is that another habitat would be destroyed*

Open Space and Undeveloped Natural Areas

Three of the Assessor's Blocks associated with the proposed development, display relatively natural features while the fourth evidences extensive previous quarrying activity.

Although all Blocks are open, accessible to the public, and contribute a feeling of openess to the general area, they do not function as active open space** Development of the proposed site would reduce the city's inventory of open space by approximately ten acres.

Figure 23 illustrates the existing nearby park and the property proposed for its expansion by the Open Space Element of the San Francisco Master Plan.

Scenic Views

With the exception of Assessors Block 1860B, the proposed development sites are up-slope of existing structures within the area. A significant portion of Block 1860B is also above neighboring structures and therefore currently impedes views toward the north and west. However, unobstructed views to the west (Ocean Beach) are available to residents of dwellings located at 125, 115, 105, and 95 Lomita Avenue. These views would be partially obstructed by the completed proposed development.

The structures proposed for development on Assessors Block 1929A will partially obstruct views toward the south currently available to residents of dwellings located at 1717, 1721, 1725, and 1733 14th Avenue, however, these homes are orientated for views toward the west.

The siting of houses along 15th Avenue as presently proposed would eliminate views below the western horizon of auto passengers traveling on the upper (northbound) section of 15th Avenue. Eye level would have to be approximately five to nine feet above the surface of northbound 15th Avenue before the western horizon could be seen. No other scenic obstructions would be occasioned by the completion of the proposed development.

Views of natural areas currently being enjoyed by residents of and visitors to the proposed development area, include the actual sites of the proposed development. Development would of course

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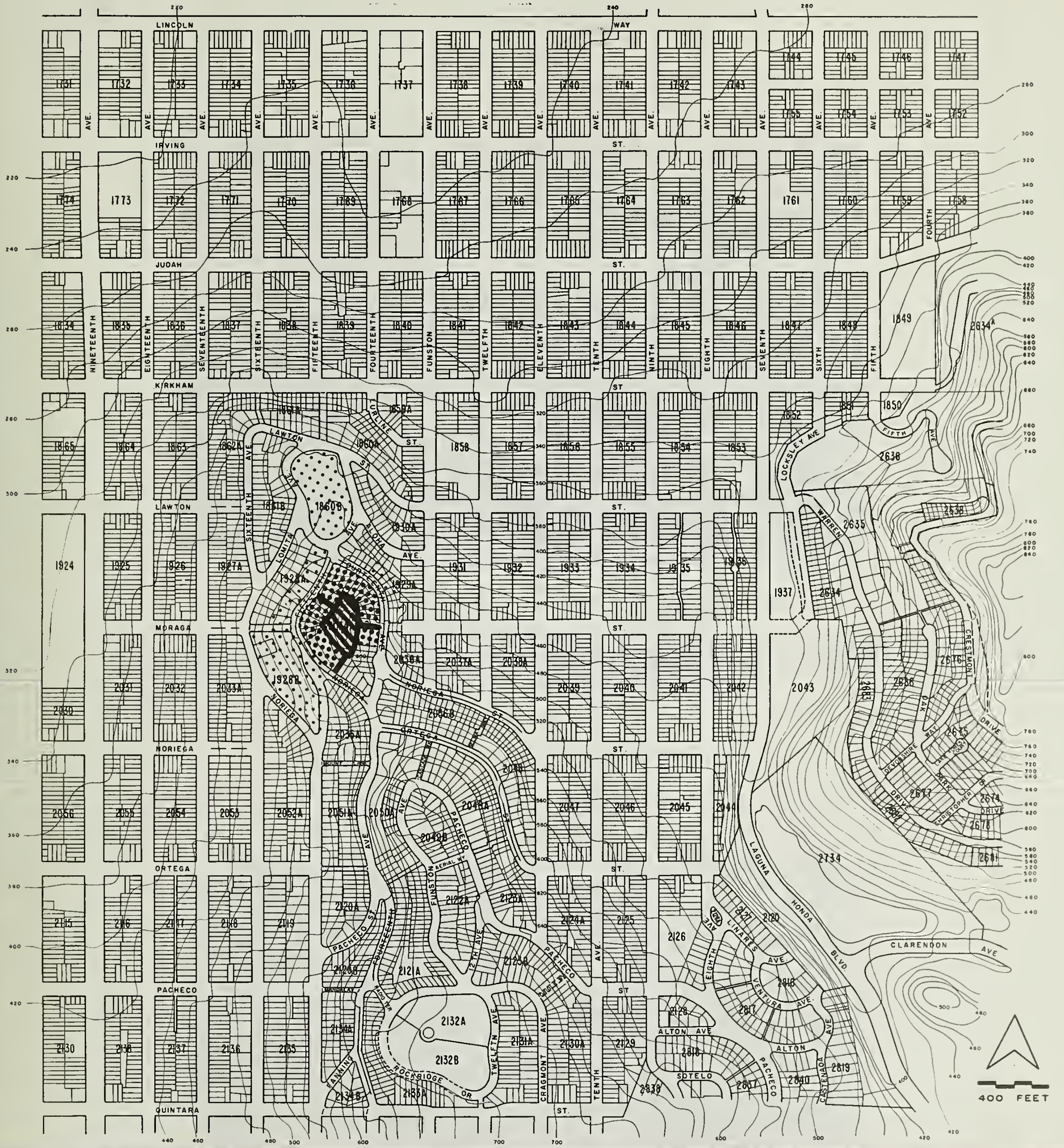
*Telephone conversation between Dr. McClintock and Paul Rosetter of the Office of Environmental Review on 11/20/74

**In the planning vocabulary, "active open space" refers to open space which has been developed with structures or other facilities used for a specific kind of recreational activity



COMMUNITY AREA LAND USE STUDY

SUNSET HEIGHTS

COMMUNITY 12 · PLANNING AREA 3

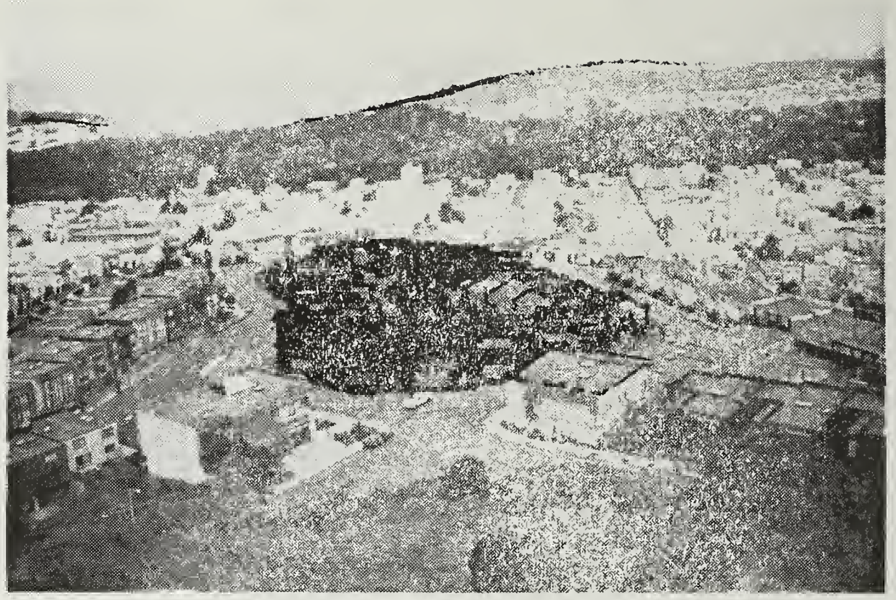
FIGURE 23

░ PROJECT AREA

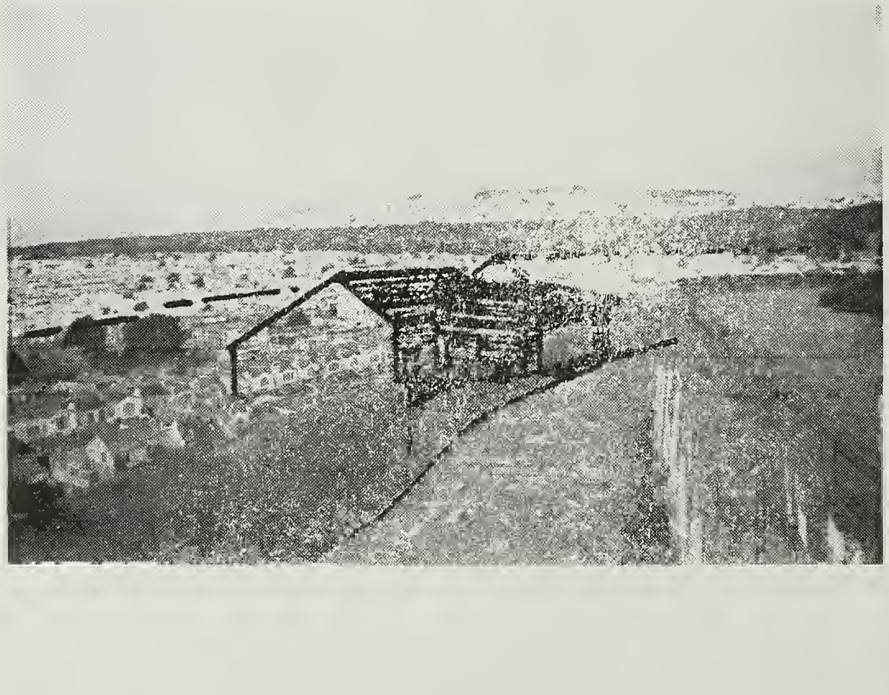
▨ EXISTING PARK

▓ PROPERTY RECOMENDED FOR ACQUISITION BY RECREATION AND OPEN SPACE ELEMENT OF THE COMPREHENSIVE PLAN

FIGURE 24

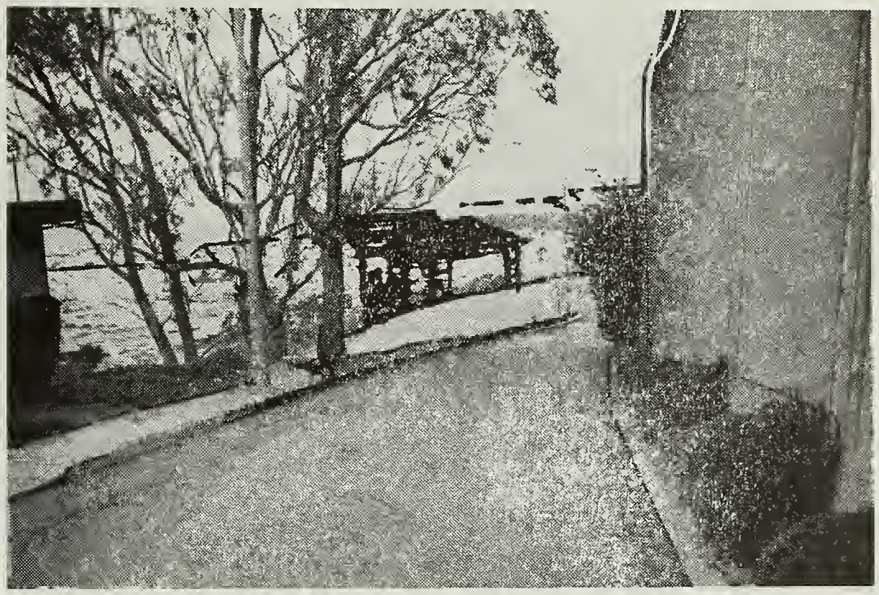


VIEW FROM GRANDVIEW PARK LOOKING NORTHWEST INTO ASSESOR'S BLOCK 1860 B

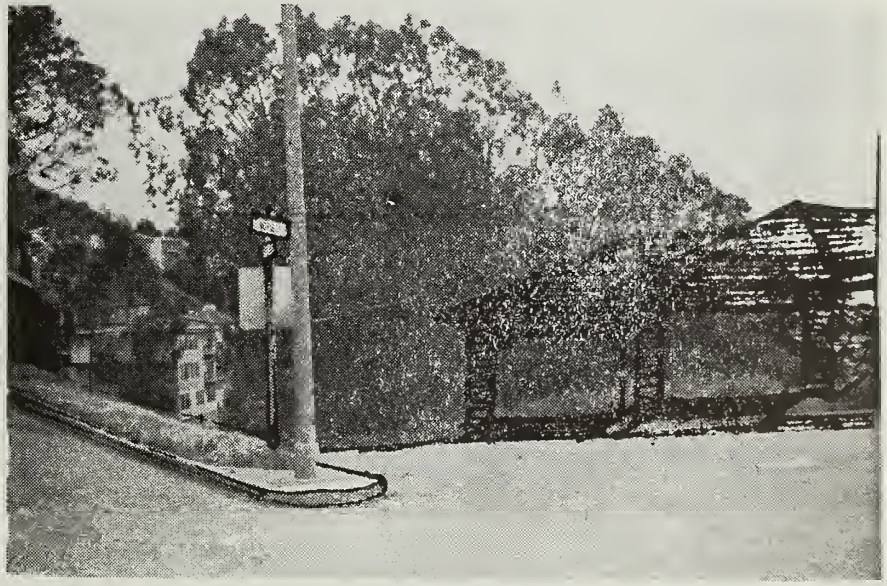


A VIEW, LOOKING NORTHWEST INTO 15th AVE AND 1928 A

FIGURE 25

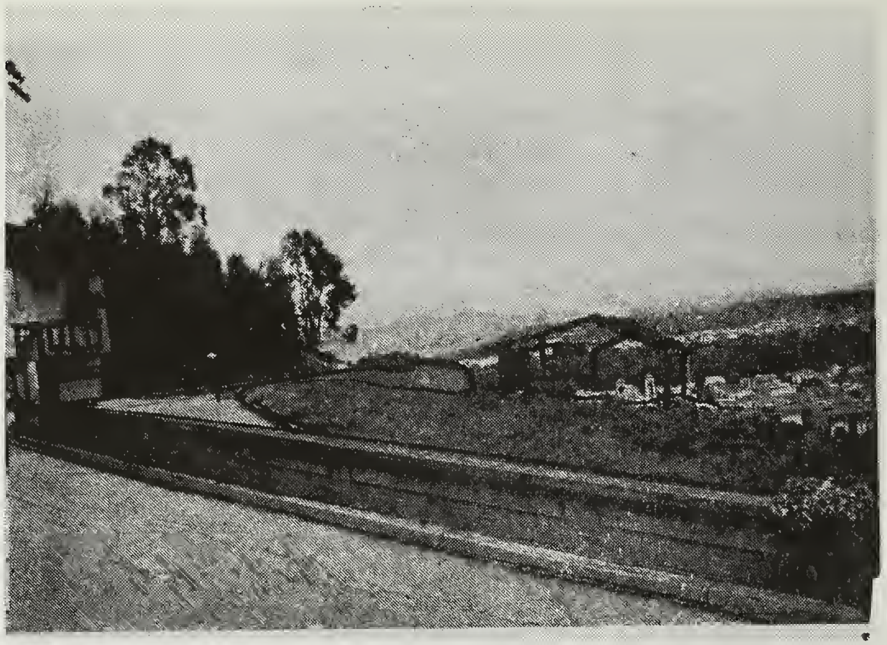


LOOKING NORTHWEST AT THE CORNER OF 15th AVE AND NORIEGA INTO 1928 B

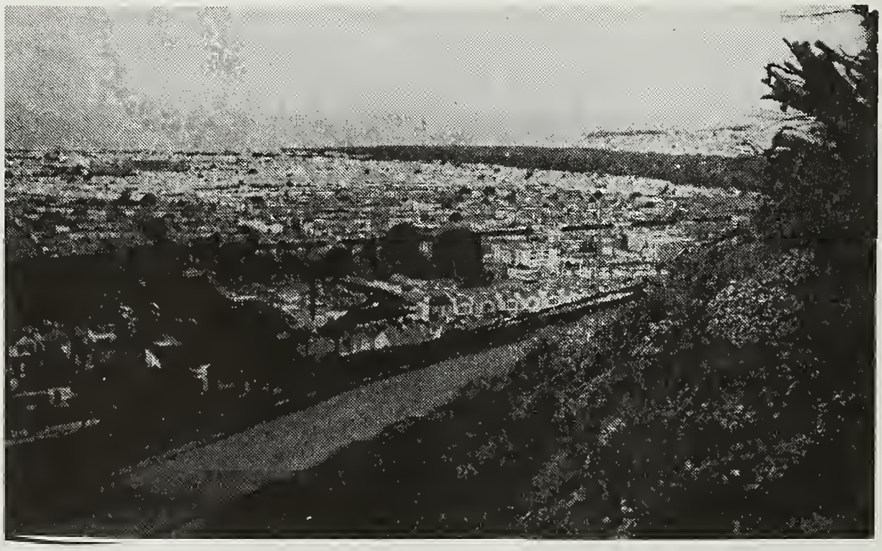


LOOKING SOUTHEAST INTO THE CORNER OF 15th AVE. ON THE RIGHT HAND OF THE PICTURE IS A VIEW OF 1928 B

FIGURE 26



A VIEW OF 1929 A FROM 14th AVE.



LOOKING SOUTHEAST INTO THE CORNER OF 15th AVE. ON THE RIGHT HAND SIDE OF THE PICTURE IS A VIEW OF 1928 B eliminate these views. Figures 24 thru 26, illustrate the approximate outlines of the proposed buildings from various locations in the area.

Drainage and Run-off

In its developed state, the proposed project will increase surface run-off to the City's Richmond-Sunset Wastewater Treatment Plant as a result of storm activity by approximately 4.6 million gallons annually. This estimate is based upon the following assumptions:

(a) Rainfall within the proposed development area is equal to the rainfall recorded by the Federal Building's rain gauge.

(b) Currently, surface soil in the proposed development area absorbs 100% of all rainfall and exposed areas will continue to do so.

(c) Rain falling upon covered areas of the proposed development area will be diverted to the City's combined sewer system.

Currently, 6.1 million gallons of rain water fall upon the proposed development area annually.

Air Quality

During the construction period of the proposed development, some deterioration to local air quality can be anticipated due to particulate emissions from motorized construction equipment and to the blowing of loose sands.

Over the long term, diminished local air quality can be anticipated due to the addition of as many as 166 privately-owned motor vehicles* to the area by residents of the proposed development.

Police Protection

Despite the relatively large population served by the Taraval Station which serves the site of the proposed development, the station has the lowest staffing level of any station in the City. This is the result of low crime experience in the past.

This situation is probably due to any number of causitive factors. However, the proposed development, with its increased youth population, could have an effect upon the areas service requirements. No factual or statistical evidence exists to either support or refute such a contention.

Fire Protection

The addition of 83 residential structures to the area obviously increases fire protection responsibilities of stations in the area. Additionally, the narrow streets surrounding the area will make access of fire fighting equipment to the new residences difficult. Fire Department officials state that fire access along the split level portions of Fourteenth and Fifteenth Avenues is possible only if no on-street parking is allowed. In order to provide adequate fire equipment access, a street must have a width of 28 feet curb to curb if there is to be parking on both sides of the street; it must have a width of 21 feet curb to curb if there is to be parking on just one side of the street. Present Fire Department personnel, equipment, and water supplies in the area are adjudged sufficient.

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*Estimate based upon two cars per family.

Water Consumption

The San Francisco Department of Public Works estimates per capita water consumption to be 137 gallons per day. Calculating based upon an average family size of 4.5 persons yields an estimate of 51,235 gallons per day consumption for the completed proposed development.

Solid Waste Disposal

Sunset Scavengers Association planning estimates are based upon daily individual solid waste generation of 2.5 to 3.1 lbs. per person.** The 374 residents of the proposed development should generate 900 to 1000 lbs. of solid waste daily.

Liquid Waste Disposal

The Department of Public Works estimates per capita sanitary waste flows at 125 gallons per day for residents of San Francisco. Based on these estimates, the proposed development would increase total sanitary flows to the City's Richmond-Sunset Treatment Plant by approximately .0047 MGD, representing a .002% increase of the average daily dry weather load. The present treatment capacity of the Richmond-Sunset Water Pollution Control Plant is about 26 MGD. The treatment is rated as "Primary treatment" and consists of chemical coagulation, sedimentation, and chlorination.

The City's Wastewater Master Plan calls for this area to be serviced by a plant providing at least full secondary treatment or whatever more stringent standards the law would impose at the time the facility were to be built. A secondary facility would probably not be built at the site of the existing Richmond-Sunset Plant. The present facility does not meet the standards of the Regional Water Quality Control Board for primary treatment. In the period before completion of the implementation of the City's Wastewater Master Plan mentioned on page 30, interim measures are proposed to improve the treatment at the Richmond-Sunset Plant to remove a higher percentage of solids, BOD, and grease. These measures are listed in the Appendix, p. 138, which also presents an explanation of the terms solids, BOD, and grease as they are used to describe sewage constituents. Untill the above changes are implemented, any additional load on the existing facilities would not receive full primary treatment and would contribute to flows which do not meet Regional Board requirements; however, it is anticipated that measures to improve the Richmond-Sunset Plant will be completed at approximately the same time as this project.

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*Source: Telephone interview with San Francisco Fire Department, Chief Gautier, 5/10/74

**Source: Telephone interview with Sunset Scavengers Association, Mr. Cavagnavo 12/12/74

Schools

Meaningful estimates of the proposed development's impact upon local schools is difficult due to two factors. First, the actual ages of children within the proposed development are not known and, second, the effects of the school district's desegregation programs is not at all clear. Clearly there will be some impact, due to the introduction of 208 children to the neighborhood; however, education facilities with the exception of the area high schools, are operating well below capacity and should the majority of the proposed development's children be assigned to area schools, they could be accommodated with relative ease.

Residents of the proposed development attending school grades Kindergarten through Third (K-3) would be bussed to Dudley Stone School, located at 1351 Haight Street. Currently, enrollment at Dudley Stone School is 430 students, while the facility capacity is 700 students.*

Energy

The proposed development would utilize natural gas for space heating purposes only. All other domestic energy requirements would be satisfied by electrical power. Both natural gas and the electrical power would be supplied by Pacific Gas and Electric Co. (PG&E).

Each unit has been designed for a connected load of 22 kilowatts (100 ampere mains), and is expected to consume 600,000 kilowatts of electrical energy annually. This would result in a total annual development consumption of 50.4 million kilowatt hours.

Electrical energy usage is expected to peak on a daily basis within the proposed development between the hours of 5 PM and 7Pm which reflects the normal period of peak residential electrical demand in San Francisco. Figure 27, illustrates this typical daily demand pattern.

Design estimates of the proposed development are for annual dwelling heating requirements of 1200 therms (a therm equals 1000,000 British Thermal Units). Therefore, the proposed development's annual requirement would equal 99,600 therms.

The diversified supply sources utilized by PG&E to supply San Francisco's natural gas requirements furnish gas with heating values which range from 1,040 British Thermal Units (BTU) to 1,080 BTU per cubic foot. Consequently, the proposed development's annual natural gas requirements would range from 9.0 to 9.35 million cubic feet of gas depending upon the heating value of the supply sources. These sources are varied and mixed in accordance with availability and demand, and vary from day to day.

Projections are that the natural gas usage of the proposed development will be seasonal, based upon climatic conditions. Figure 28, depicts this projected usage pattern.

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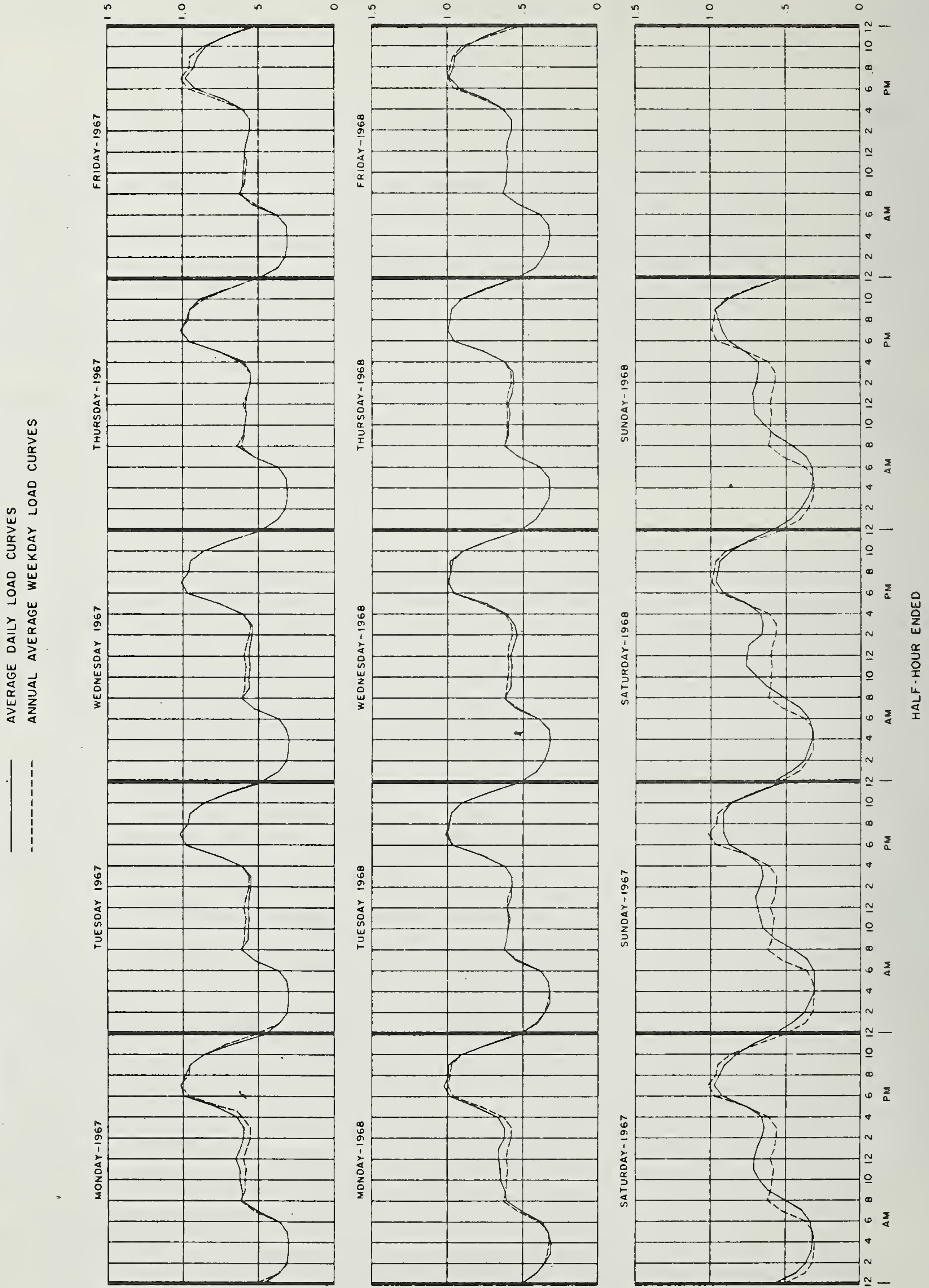
*Source: Telephone interview with Ms. Francis Campany, Clerk, Dudley Stone School, 10/4/74

FIGURE 27

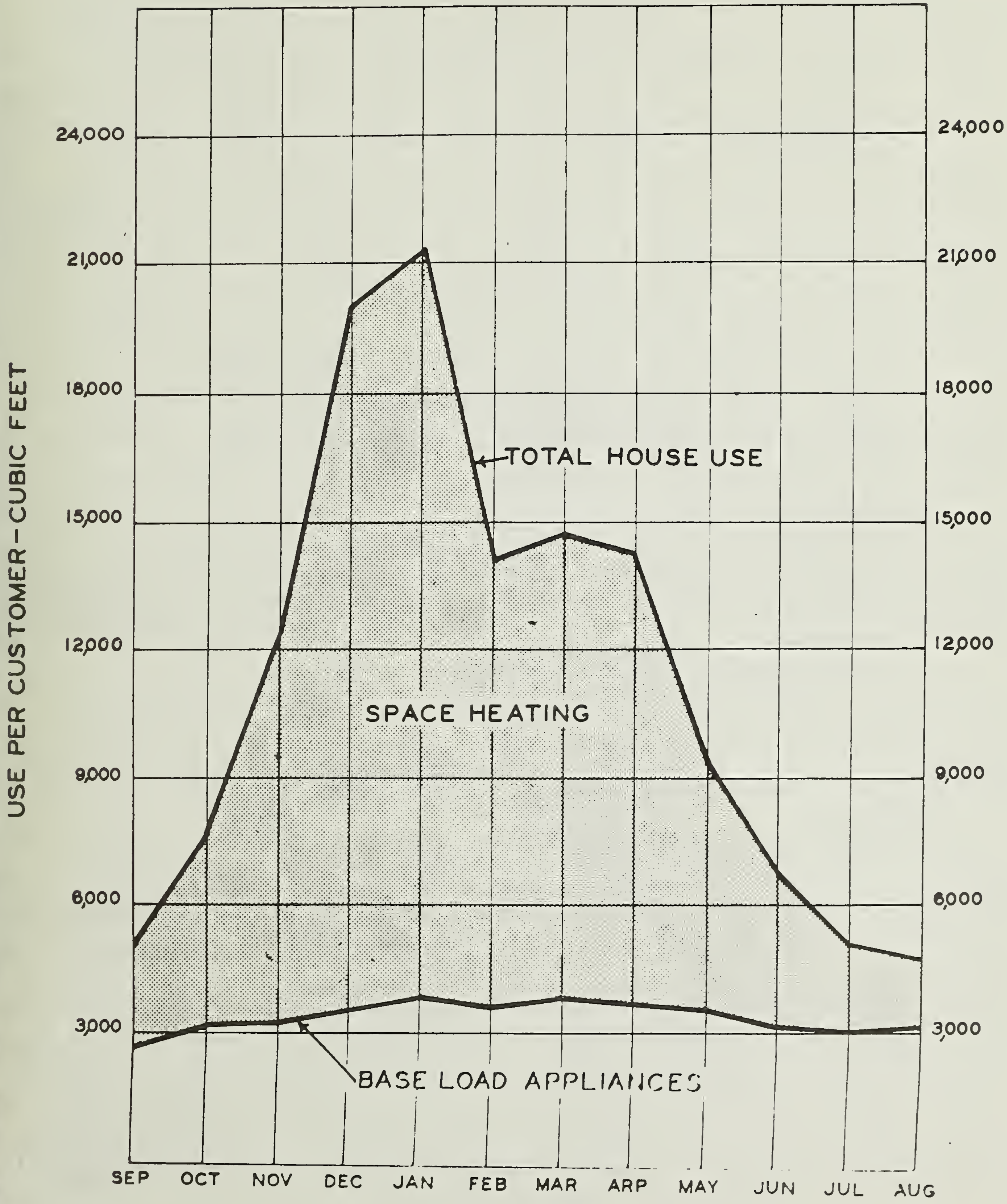
RESIDENTIAL SERVICE

COMPARISON OF AVERAGE DAILY LOAD CURVES TO ANNUAL AVERAGE WEEKDAY LOAD CURVES



Source: Residential Service Electric Load Characteristics Study Part II Pacific Gas and Electric Company Rate Research Department, 1970

RESIDENTIAL GAS SPACE HEATING
MONTHLY AVERAGE USE YEARS 1967-68
SAN FRANCISCO BAY AREA
P. G. & E.



Source: Residential Gas Appliance Load Research Project Marketing Research and Services Department PG&E, 1970

FIGURE 28

Transportation

Vehicular

This section contains three sets of traffic generation data: (1) The City Traffic Engineer's prediction of vehicular trip generation per dwelling unit for any purpose. (2) Department of City Planning modal split of all trips for any purpose. (3) Census data for trips to work. It has been claimed that the existence of 2-car garages in the development will cause it to generate more private vehicular traffic per unit than is typical of the area. There are no statistics available equating the number of parking spaces per unit with the number of autos owned by households or the amount of daily traffic generated by the unit. Each garage space may be used for work space or for household storage. It has also been claimed that the fact that the units are priced for high-income families means they would generate more private auto traffic than is typical of the area. Again, there are no statistics to document this notion. An individual's inclination to use public transit rather than private auto may be determined more by personal values than by income.

Traffic engineers within the City's Department of Public Works estimate that single family residential dwellings generate from six to eight trips daily, one of which will occur during the peak travel period which coincides with the evening rush hour. On this basis, the proposed development would generate an additional 498 to 664 daily trips.

Estimates by the Department of City Planning are that 50% of all trips by city residents will be accomplished by means of public mass transit. Making allowances for these modal preferences, we can project that approximately 249 to 332 additional automobile trips will be generated daily as a result of the proposed development's completion.

The street system within the proposed development area is capable of accomodating vehicular traffic at a minimum rate of 350 vehicles per hour.* Many local streets in the vicinity are narrow and not intended for the traffic speeds experienced on wider local streets. It can be expected that the increased traffic counts would increase the occurances of speeding and accidents by a corresponding amount.

Table 3 shows travel to work mode and destination data compiled from the 1970 Census for the City, planning district, and census tract in which the proposed development is located. The smallest and therefore the most relevant of these areas is the census tract. Assuming that the proposed project is typical of the CT 303 population in 1970 with an average of 1.2 persons in each of the 83 units traveling to a job on a regular basis, one can predict that 100 people would be traveling to work from this development. Twenty-nine of these people would travel to downtown and, of these, 13 would be traveling by automobile either as driver or as passenger while 16 would use public transit. However, the majority of the 1970 CT 303 population did not work in the downtown area. If the proposed development reflects this fact, one can predict that 59 people from this

---

*Calculation based upon a one-way street, affording but one vehicular lane and a 20 mile per hour maximum speed.

TABLE 3

MODE AND DESTINATION TO WORK

To Work in S. F. Central Business District (C.B.D.)

From Mode	C.T. 303	Inner Sunset Planning Dist.	City-wide
Automobile	43.2 %	37.0 %	29.0 %
Transit	56.8 %	61.0 %	57.0 %

To Work Anywhere

From Mode	C.T. 303	Inner Sunset Planning Dist.	City-wide
Automobile	59.4 %	57.3 %	49.1 %
Transit	31.9 %	32.9 %	35.6 %
Walk	3.7 %	5.5 %	10.5 %
Other	2.5 %	2.0 %	1.9 %

Where People Work

From To	C.T. 303	Inner Sunset Planning Dist.	City-wide
S.F. C.B.D.	29.2 %	26.0 %	26.2 %
Rest of San Francisco	56.6 %	55.6 %	54.6 %
San Mateo	3.9 %	4.9 %	4.7 %
Marin	.31 %	.52 %	.40 %
East Bay	4.2 %	3.1 %	2.6 %
Outside Metro Area	1.4 %	2.4 %	1.6 %

Source: 1970 Census
Compiled by Edward A. Green, D.C.P.

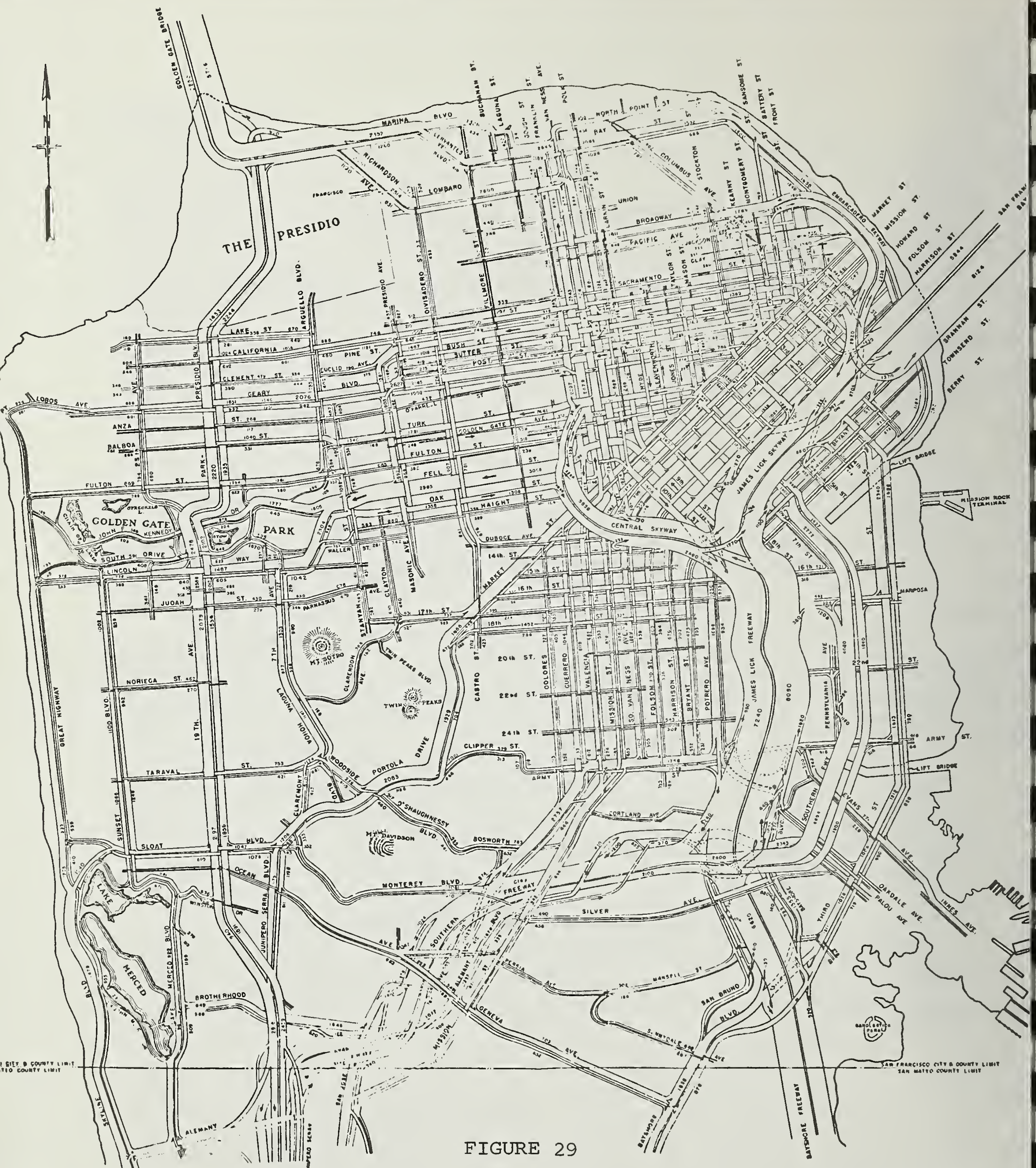


FIGURE 29

NOTES

HOWN ARE ACTUAL TRAFFIC COUNTS
HE EVENING PEAK HOUR AT VARIOUS
E YEARS 1969 THRU 1973, UNADJUSTED
OR DAILY TRAFFIC

UP STREETS AND FREEWAY RAMPS
MMATIC ONLY

NE WAY TRAFFIC FLOWS ARE SHOWN
ON ARROW

FLOW NOT TO SCALE

CITY & COUNTY OF SAN FRANCISCO
EVENING PEAK HOUR TRAFFIC FLOW
ON PRINCIPAL STREETS & HIGHWAYS
1969 - 1973

DEPARTMENT O
PUBLIC WORK
BUREAU OF ENGINEE
DIVISION OF
TRAFFIC ENGINEE
DRAWN BY V.T.

development would travel to work by automobile. Thirty-two persons from the development would travel by public transit.*

Through routes to downtown from the proposed project area are difficult and infrequent. The most probable route is the Lincoln Way-Oak Street corridor, while the most probable return route involves the Fell Street-John F. Kennedy Drive corridor. Currently, these routes are crowded and characterized by congestion during peak travel periods. Figure 28 details recent traffic peak-hour counts obtained at points along these trafficways.

Transit

According to a report to the Department of City Planning dated 2/4/75 by the City Public Utilities Commission, (see Appendix, page 139) ride checks conducted by Municipal Railway's Traffic and Schedule Department for the #66 Line during January, 1975 indicated that evening peak hour ridership on this Line "was close to the maximum desirable load for evening peak hour service and actually in excess of this maximum for the peak 15 minutes to the peak hour. Ride checks were conducted for the #10 Line during October, 1974. The checks indicated that passenger loads on this line, "were close to the maximum desirable for the morning peak hour and in excess of this maximum for the peak 15 minutes in this period. The report concluded that "...relatively minor increase in transit demand generated by the proposed development would be manifested on transit lines which are already crowded. The #28-Nineteenth Avenue motorcoach line is currently crowded during the AM peak as a result of heavy usage by high school and college students. The proposed development is not expected to significantly aggravate this problem. However, plans are currently underway to expand service on this line.**

Parking

Currently, unrestricted curb-side parking is available at the street side of all sites proposed for development. A total of 162 spaces is available.*** However, these spaces are seldom used because virtually all dwellings in the immediate proposed development area have garages; most of them, two car garages. As a consequence, the currently available spots receive little use other than by guests of the area residents. The proposed development would reduce existing street-side parking opportunities by approximately 73, leaving a total of 89 spaces.

The split level sections of 14th and 15th Avenues are not presently used for on-street parking even though they are not posted. If the project were implemented, on-street parking may have to be officially prohibited along these sections because of the access requirements of the Fire Department (see Chapter IV, Mitigation Measures concerning narrowness of streets). Parking could be allowed along one side if the curb-to-curb dimensions could be widened three feet reducing the sidewalk width to two feet or widening the right-of-way to provide for adequate sidewalk.

---

*Since more than one project resident could travel in the same auto, this figure cannot be directly equated with the number of auto trips generated by the project.

**Source: Telephone interview of Mr. Tom Standing, Muni Railway, 10/2/74

***Calculation based upon 22-foot parking spaces which are mid-block standards for San Francisco.

Neighborhood Concerns

Residents of the area have expressed a number of concerns regarding the proposed development.

One item of concern was the fear that the removal of the existing ground cover would cause landsliding and creeping of the sand which constitutes the surface soil of the site. Refer to the discussion of soil stability in Impact section, page 35.

Another item is the width of the streets bordering the site. Present residents fear that additional parking along the streets will constitute traffic hazards and increase fire losses by making it difficult for firefighting equipment to gain access to the area. This concern has also been raised by the Fire Department (see page 43.

Present residents claiming that Grandview Park is not very accessible would like to have the entire project site retained as open space. They have cited the former quarry site (Assessor's Block 1860B) as being suitable for recreation. Refer to the "Objectives of the City" section which follows, for the policy regarding acquisition of open space in the area.

Present residents have expressed concern over the prospect of increased traffic, claiming that more private auto traffic would be generated on a daily basis than reported herein due to the fact that the proposed development would be for high-income families. Refer to the discussion of traffic in the Impact Section, page 48.

Objectives of the City

This section discusses the elements of San Francisco's Master Plan relevant to this development.

Several policies of the Urban Design element apply to this site. The discussion of Policy #1 of "Policies for City Pattern" states that visibility of open spaces, especially those on hilltops should be maintained and improved and also that landscaping be installed or encouraged in the area from Golden Gate Heights to Golden Gate Park (p. 11). The discussion of Policy #1 of Policies for Conservation encourages programs for conservation of both land features and ecology in public and private land.

"Land" Policy #5 of the Conservation element states: "Prohibit construction, as a general rule, on land subject to slide or erosion. The soil reports included in the appendices of this document outline methods to overcome hazards of landsliding and soil erosion in the construction of this project. "Flora and Fauna" Policy #3 of the Conservation element calls for public agencies to cooperate in devising ways to assure the fullest possible protection of rare and endangered species.

All the subject sites are within a special geologic study area as defined by the Community Safety element. For projects within special geologic study areas, Policy #4 of this element calls for geologic and soil engineering site investigations. Such investigations have been conducted for the entire development.

CHAPTER IV

MITIGATION MEASURES

The following mitigation measures are proposed to reduce the effect of certain adverse impacts likely to occur as a result of the proposed development's completion.

Soil Erosion

The soils engineer for this project has proposed several methods of reducing the possibilities of erosion including planting (see Appendix page 67), construction of berms or lined trenches at the top of all slopes, and provisions for drainage facilities to be reviewed and inspected by a representative of the engineer's office. The retaining walls will be screened from off-site views by appropri0 ate plantings.

Construction Noise

During construction of the proposed development, local noise levels would likely increase. While this increase is for the most part unavoidable, the developer proposes to mitigate the adverse effects of such occurances by scheduling noisy construction activities for normal waking hours. The developer would conform to the requirements of Part II, Chapter VIII, Article 29, Sections 2907, 2908, and 2909 of the San Francisco Municipal Code, which prescribes permissible noise levels for construction activities within residential areas.

Excavation

Although extensive excavation of some of the proposed development sites will be required, excavation on other sites will be minimized by using foundation designs which require the least landform alteration.

Utilities

All utilities to be used by the proposed development would be delivered underground at the rear of the individual lots thereby eliminating the need for unsightly above ground facilities.

Presence of Nature

In order to save the trees on the site from accidental damage, the contractor could post a trust account payable to the construction equipment operators personally. The account would be reduced by a substantial amount for each tree which is damaged by construction equipment. Damage to existing trees could be avoided by strict adherance to recommendations of competent tree experts. Such recommendations appear on page .

Energy Consumption

For gas heated houses in an area characterized by high humidity and wind velocity, moderate tempartures and low solar radiation, the construction features most effective in saving energy are weather-stripped storm doors and storm windows with a small total exposure. The orientation of the building, increased insulation and an automatic flue shut-off for the furnace are features having a moderate effect on energy conservation* All the windows in the proposed structures would have some weather stripping with an average amount of exposure. They would have more insulation than required by current State law. The buildings were not sited according to prevailing wind direction and would not incorporate automatic flue shut-off controls.

Seismic

Mitigation to reduce seismic hazards involves the construction of the project in strict conformance with the recommendations of a licensed soil engineer as presented in the soil reports (see Appendix, p. 137).

Narrowness of Streets

The project sponsor intends to widen by two feet certain portions of 14th Avenue and 15th Avenue where they front on Assessor's Blocks 1928A, 1928B and 1929A. This modification satisfies the concerns of the Fire Department about the ability of these streets to accomodate firefighting equipment.

---

*Source: The Applicability of the Residential Energy Consumption Analysis to Various Geographic Areas, HUD booklet, 11/73, Table I, p.10

CHAPTER V

ALTERNATIVES

The Null Alternative

Alternatives to the proposed development include the null, or do-nothing alternative. Adoption of the null alternative would preserve the natural and open character of the sites proposed for development. Such a course of action, however, is not consistant with the developers financial goals.

Use of the Site for Open Space or Recreation Facilities

A memorandum from the Director of Planning to the City Planning Commission dated February 3, 1975 discussed the question of open space in the area:

> "The Recreation and Open Space Element of the Master Plan calls for expansion of Grand View Park to include privately owned land in the remainder of Block 2034A, across 15th Avenue from block 1928B, and acquisition of a large area of rock outcropping a block to the south along 14th Avenue. The southerly end of Block 1928B, with its stand of mature and highly visible Cypress and Eucalyptus trees, although not designated in the Master Plan for acquisition, would make excellent park space of a character substantially different from that in the two other areas. While the three areas are not contiguous, they are interconnected visually and could be considered as a unit."
>
> "Public acquisition of the wooded area by gift or purchase would seem very desirable and means for such acquisition should be a major consideration in review of the proposed subdivision. Among the possible means are the following:
>
> 1. A gift to the City by the developer. Such a gift would be a voluntary act.
>
> 2. Required dedication to public use. Although the 'Subdivision Map Act' makes provision for required dedications of recreation and open space areas, a requirement may be imposed only if authorized by the local subdivision ordinance. San Francisco has not adopted a subdivison ordinance, and therefore such a requirement may not be legally imposed as a condition of approval of a subdivision.
>
> 3. Neighborhood acquisition. This might be done by an agreement among neighborhood residents or by a special assessment district.

4. Use of the Open Space Acquisiton and Park Renovation Fund established by Proposition J. Money from that Fund has not yet been committed to specific projects, but in any event the Charter section adopted requires that acquisition be limited to properties described in the Recreation and Open Space Element of the Master Plan, and in the "Recreation and Open Space Programs" document. None of the property in either block proposed for subdivision would now qualify.

5. Require reservation of the wooded area as a common area for use by subdivision residents. This would not actually be a form of public acquisition, since the wooded area would remain private and would not be available for public use, other than enjoyment of the visual and open space effects of the reservation.

6. Require reservation of the wooded area for a period of time to make possible its eventual acquisition by the City. By this method, the City could be given a specified period of time, such as three years, within which to purchase the wooded area. In order to make this reservation, the proposed map would be changed by omitting any platting of individual lots in the wooded area, and by removing the former lot lines in this area, so as to constitute the wooded area as a single parcel with a notation as to the reservation.

In a letter dated April 14, 1975 to the Clerk of the Board of Supervisors, the Director of City Planning announced that the Department has estimated the purchase price to be between $1,5000,000 and $2,000,000 and that it would be possible to use Proposition J funds for a phased purchase period if the property qualified for acquisition (see Appendix, p. 140).

The Development Under R-1-D Zoning

Most lots in the proposed subdivision and re-subdivision have enough area and frontage to be built upon with side yards without revising their dimensions. Lots subdivided at the time R-1-D zoning becomes effective would not require side yards if they were less than 28 feet in width. However, all the lots in the proposed development are wide enough so that side yards up to 3 feet would be required.

Side yards would offer views between buildings, reduce the massive appearance and provide space that could be used for landscaping. If buildings were increased in height rather than in depth to compensate for a narrower dimension, there would be less lot coverage and consequently less storm water runoff. However, an increase in building height would increase view blockage. Side yards would require a more finished treatment of the building side walls and therefore could mean higher construction costs.

Since under R-1-D zoning, nearly the same density could be allowed as that proposed, the effects on transportation facilities and public utilities would be nearly the same as for the proposed development.

Develop the Site as a P.U.D.

Generally, the feasibility of Planned Unit Developments rests on the ability of the developer to realize advantages in exchange for providing advantages to the public. A P.U.D. on Assessor's Block 1860B could provide some public open space on the flat area next to 15th Avenue in exchange for dwellings on slightly narrower lots built on those portions of the block which offer the best view potential. A P.U.D. in Assessor's 1929B could offer enough design flexibility to preserve the wooded area if the dwelling units could be grouped together in another part of the block. This grouped arrangement could take the form of a condominium if a market survey found it feasible. If the same number of dwelling units as now proposed were to be placed in fewer structures, it may be feasible to include more costly foundations which would enable the structures to be placed away from 15th Avenue and allow 15th Avenue to be widened.

This alternative might result in lower lot coverage with less storm water runoff. It could provide more open space and less continuous view blockage. However, a few large structures may present a more massive appearance and may require a greater height. Assuming the number of dwelling units provided under a P.U.D. would be the same as that proposed, the effect on transportation facilities and on public utilities would be the same as presented for the proposed development.

More Intense Site Development

The proposed development sites are within R-1 (single-family residential) zones. No more intense development than that proposed by the developer is permitted in such areas. As a result, a more intense development would require a change in the area's zoning status. Such an occurance is held to be highly unlikely by the developer.

Less Intense Site Development

A development which would leave open those areas with the greatest geologic obstacles to safe construction would provide a lower density and could provide larger lots which would allow more flexibility in siting the buildings. The lower density would lessen the intensity of such local impacts as those on traffic and also on more general impacts as those on the City's wastewater treatment facilities. This alternative would also make it easier to save trees located on the site and to save some of the other natural habitat on the site.

CHAPTER VI

STATUTORY

Irreversible Environmental Impacts

The irreversible environmental impacts which would occur should the proposed development be permitted include; destruction of the site's present natural character, permanent alterations of the landform, and commitment of resources in the form of building materials and, natural and mechanical energy which are reasonably permanent in that they are but marginally recoverable.

Short-Term Use vs. Long-Term Productivity

The use of the land involved in the proposed project for residential development represents a long-term commitment. Barring unforseen calamity, the resulting residences should provide adequate shelter for many years in the future. Thus, residential development while representing the highest and best economic use of the land, also affords its most productive long-term use, as the land has little value for agricultural or mineral extractive endeavors.

Historic, Archeological, and Architectural Resources

No locations appearing on the National Historic Register are involved in the proposed development. Additionally, no sites designated by the City's Landmark Preservation Advisory Board as historicly significant are affected.*

The entire site of the proposed development is not known to have ever been developed. Consequently, no architecturaly significant structures are involved.

The State of California Department of Parks and Recreation's inventory of archeologically significant locations lists no sites within San Francisco County as being of archeological significance, however, contracts between the developer and the excavator will contain a clause providing for cessation of excavating activities and evaluation by professionally competent personnel should any such sites be discovered.

Growth Inducing Impacts

Growth inducing impacts normally associated with residential development of the nature of the proposed development, usually confine themselves to growth of retail community service types of commercial activity, typified by dry cleaning establishments, beverage and convenience food outlets, and specialty shops.

San Francisco's zoning ordinance restricts these activities to C-1 and less restrictive zoning districts, the nearest of which to the proposed development is located along 19th Avenue, and beyond on Taraval, and Noriega (see Figure 30). Additionally, the proposed

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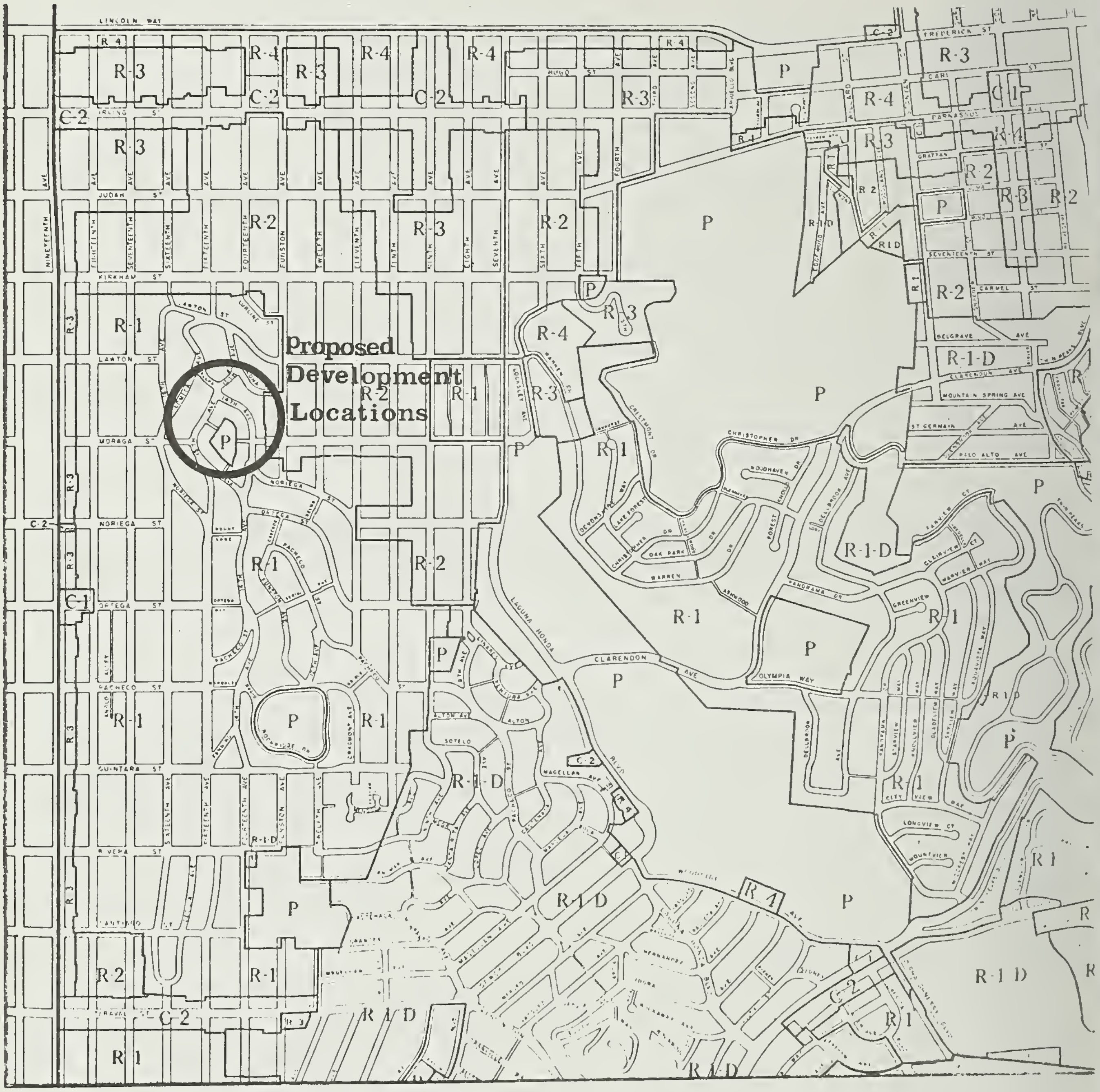
*Source: Telephone interview, Ed Michael, Secretary, San Francisco Landmarks Preservation Advisory Board, 10/2/74

FIGURE 30

AREA ZONING



development is within close proximity to West Portal, and Irving Avenue, both of which are important neighborhood shopping districts while Stonestown, a major regional shopping center, is within easy and convenient automobile access and is directly serviced by the #28 Nineteenth Avenue motorcoach line.

Each of these commercial areas is highly developed. The additional residential population which might be introduced to the area as a result of the proposed development's completion represents a .76% increase in the residential population served by these facilities.

EIR Authors and Contributors

Author: Department of City Planning, City and County of San Francisco
Contact: Dr. Selina Bendix, Environmental Review Officer
Mr. Paul Rosetter, Planner

Preliminary Draft EIR prepared by: SPECTRUM-NORTHWEST
Contact: Mr. Wallace E. Stokes, III, Principal
Ms. Research Associate

Consultations were made of the following persons or firms:

Morgan Howell Architects and Planners
Contact: Morgan Howel, AIA
Tony Battaglia

Jo Crosby & Associates,Civil Engineers-Geologists
Contact: Jim McNely C.E. 13063

Hawaii-San Francisco Investment Company
Contact William Ghidossi

California Academy of Sciences
Contact: Dr. Dennis Breedlove
Dr. Elizebeth McClintock

Pacific Gas and Electric Company
Contact: Office of Marketing Research and Services

U.C. Developers
Contact: Mr. McCormick

San Francisco Unified School District
Contact: Mr. Clay

San Francisco Fire Department
Chief Gautier

San Francisco Water Department
Contact: Mr. Medberry

Municipal Railway
Contact: Mr. Standing

Sunset Scavengers Association
Contact: Mr. Cavagnavo

Dudley Stone School
Contact: Ms. Campany

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1. Woodward-Lundgren and Associates; Geology, Seismicity and Earthquake Effects, San Francisco Wastewater Master Plan, 1974
2. City and County of San Francisco-U.S. Environmental Protection Agency; Environmental Impact Report and Statement, San Francisco Wastewater Master Plan, 1974
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James J. Finn, Director of Transportation, PUC

CALIFORNIA ACADEMY OF SCIENCES
GOLDEN GATE PARK SAN FRANCISCO CALIFORNIA 94118
(AREA CODE 415) 221-5100

THE SCIENCE MUSEUM
THE ALEXANDER F. MORRISON PLANETARIUM
THE STEINHART AQUARIUM

Department of Botany

20 May 1974

Dear Mr. Stokes;

Enclosed find a list of the native plants found in assesors blocks 1860B,1928B and 1929 in the Golden Gate Heights. Aside from many weedy and adventive introduced plants which were not listed, there occurred many plants of the beach, dune and bluff habitat of central California. Although these plants are not endangered or rare this is one of the few remaining localities that they occur in San Francisco. These species are marked with a single asterisk. The next to last species in the list(double asterisk) is the very rare and very endangered species, the Dune Tansy. The location is marked with a red pen in block 1928B in the enclosed map. It does not occur any where else in the Golden Gate Heights. It is foudd in only a couple of localities in San Francisco and these also are threatened with construction.This is the range of the entire species.

In all this work took eight(8) hours. My fee then is 200.00 dollars. I should explain that I did this work because Dr. Elizabeth McClintock asked me when she found she would be out of town for the next two weeks.

Yours Sincerely

Dennis E. Breedlove
Associate Curator

CALIFORNIA ACADEMY OF SCIENCES
GOLDEN GATE PARK SAN FRANCISCO CALIFORNIA 94118
(AREA CODE 415) 221-5100

THE SCIENCE MUSEUM
THE ALEXANDER F. MORRISON PLANETARIUM
THE STEINHART AQUARIUM

Department of Botany

February 20, 1975

Regarding the Draft Environmental Impact Report EE 74:72,
Golden Gate Heights, Residental Development, Assessors Blocks 1928, 1982B, 1860B

The important point regarding this site is that it is one of perhaps only two remaining sites in San Francisco where the sand dune or coastal strand plant community exists today. This community contains an assemblage of plants which are adapted to the on-shore winds, sandy soil, temperature and rainfall conditions which occur in San Francisco.

Sand dunes once covered a large part of the area of San Francisco and on these dunes flourished the plants of the sand dune plant community. Today all of the level ground and the hills (except for the steepest slopes) are covered with pavement, houses, etc., and the natural areas are all but gone. However, on Sunset Heights and the south facing slope of Sutro Heights there are remnants of the once so widespread sand dune plant community. On the Sunset Heights site are 24 plants of the sand dune community, a remarkably large number for so small a site. Among the 24 is the rare and endangered dune tansy. In addition there are 6 other plants which are characteristic of this vulnerable California coastal dune habitat.+ In order to preserve these plan the entire plant community on this site must be preserved.

(Today when preparations are being made for the Bicentennial thought should be given in San Francisco to preserving this last bit of the San Francisco natural scene which was here in 1776.)

Elizabeth McClintock
Curator

Dennis E. Breedlove
Associate Curator

+While these are not on the list of California rare and endangered species (the sand dun habitat has not been wiped out i California as a whole) these are rare and endangered in San Francisco!

JO CROSBY & ASSOCIATES
CIVIL ENGINEERS - GEOLOGISTS

756 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94040

P. O. BOX 4220
TELEPHONE (415) 969-3268

File 2543-32
April 24, 1975

Ms. Selina Bendix
Environmental Review Officer
Department of City Planning
100 Larkin Street
San Francisco, California 94102

Subject: DEIR Item No. 2
Proposed Golden Gate Heights Development
San Francisco, California

Dear Ms. Bendix:

Reference is made to Ms. Selina Bendix letter to Mr. Wally Stokes, dated April 14, 1975, regarding a request for information concerning Blocks 1928-A and B and 1860-B of Golden Gate Heights development DEIR Item No. 2.

We have been requested, as the soils engineer for the subject project, to speak to the issues of potential sliding, creep, and erosion of the proposed cut and fill slopes.

This letter is to confirm that we have performed field explorations and engineering analyses of the existing soils and geologic conditions and of the proposed construction and have submitted our findings and recommendations. It is our professional opinion, based on modern techniques and practices currently employed in the field of soils engineering and geology, that if our recommendations are carried out, the proposed cut and fill slopes will not slide nor creep to a significant degree under any conditions which may be reasonably anticipated.

To inhibit surface erosion of the slopes, we have recommended that they be planted as soon as feasible following construction of the proposed homes. We have checked with the developer regarding this matter, and he informs us that his construction specifications call for planting of all exposed slopes with Hydro-mulch applied at a minimum density of 1,500 lb/acre of wood cellulose and 75 lb/acre of seed mix. The seed mix is to be comprised as follows:

20%	Crimson Clover
20%	Red Clover
20%	Birdsfoot Treefoil
20%	Wildflower Mix
20%	Blando Brome

Our recommendations concerning earthwork and foundation design criteria are contained in the following letters and reports:

A. Bound report to Homestead Savings and Loan Association, Foundation Investigation, dated August 25, 1971.

B. Bound report to Homestead Savings and Loan Association, Stability Study for Portions of Block 1928-B, dated January 4, 1972.

C. Letter to Mr. Morgan Howell, Slope Stability, dated February 20, 1974, with attached drawing dated 2/13/74.

D. Bound report to Hawaii and San Francisco Investment Company, Foundation Exploration, Block 1860-B, dated April 5, 1974.

E. Letter to Hawaii and San Francisco Investment Company, Pier Design Criteria, dated April 22, 1974.

F. Letter to Western Subdivision Engineering Company, Grading Plan Review, dated August 2, 1974.

G. Letter to Morgan D. Howell, A.I.A., Drainage Terrace Width Revision, dated August 12, 1974.

H. Letter to Hawaii and San Francisco Investment Company, Friction Pier Design Criteria, dated October 17, 1974.

I. Letter to Hawaii and San Francisco Investment Company, Summary of Foundation Recommendations, dated October 18, 1974.

We trust the above information fulfills your request.

Very truly yours,

JO CROSBY & ASSOCIATES

Jim Mc Nely

Jim McNely

Jo K. Crosby
C.E. 13063
E.G. 357

JM:mto

cc: Hawaii and San Francisco Investment Co.- Attn: Mr. William Ghidossi

JO CROSBY & ASSOCIATES 750 CALIFORNIA STREET (415) 969-3208
MOUNTAIN VIEW, CALIFORNIA 94040

RECEIVED
SEP 8 1971
CHIN & HENSOLT
CONSULTING ENGINEERS

RECEIVED
DEC 21 1973

File No. 2167 - L93
August 25, 1971

Homestead Savings and Loan
c/o Chin and Hensolt, Inc.
121 Second Street
San Francisco, California 94105

Subject: Foundation Investigation
Block 1928B, Golden Gate Heights
San Francisco, California

Gentlemen:

Upon your request and authorization we have completed the subject investigation. Our findings and recommendations are presented in this report. The investigation was based on preliminary plans for development. To minimize conflicts between our recommendations and the final plans, we should review the final building plans prior to construction.

Should you have any questions regarding the information and recommendations presented in this report, please contact our office.

Very truly yours,

JO CROSBY & ASSOCIATES

Roy E. Moore

Jo K. Crosby
C.E. 13063

REM:ln

Ridly

JO CROSBY & ASSOCIATES 756 CALIFORNIA STREET (415) 969-3268
MOUNTAIN VIEW, CALIFORNIA 94040

FOUNDATION INVESTIGATION

for

HOMESTEAD SAVINGS AND LOAN

* * * * * * * * * * * * * *

Block 1928B, GOLDEN GATE HEIGHTS

SAN FRANCISCO, CALIFORNIA

* * * * * * * * * * * * * *

August 25, 1971

FOUNDATION INVESTIGATION

Purpose and Scope

The investigation was instigated to develop suitable design criteria for the planned one- and two-story single family residences on Block 1928B in Golden Gate Heights, San Francisco. The proposed development consists of 32 single family residential lots with appropriate facilities. The recommendations presented herein are based on the aforementioned information and a "Topographic Survey of Block 1928B, Golden Gate Heights, San Francisco, California, for Homestead Savings and Loan Association," prepared by Western Subdivision Engineering Company, dated July 9, 1971.

The scope of the investigation included test borings at selected locations, sampling of pertinent soil and rock strata, and appropriate laboratory testing. A geologic study complemented the program of drilling in the field. We feel that the work undertaken was adequate for the scope of the development. The data obtained was used to develop design criteria for the types of foundations, the bearing capacities of footings, lateral earth pressures, slabs-on-grade, drainage facilities, and general site grading. It should be noted that it is not uncommon to encounter unforeseen variations in the soil and rock conditions during construction. Such conditions frequently require additional engineering services for reviews and subsequent recommendations to attain a properly constructed project. For this reason, we recommend some contingency fund to be established to accommodate charges that may arise for any necessary additional engineering services.

Site Description

The San Francisco site, as shown on the enclosed Site Plan, is bordered on the east by 15th Avenue, on the south by Noriega Street, on the west by 16th Avenue, and on the north by Moraga Street stairway. The upper portion of the property slopes steeply to the west with the lower portion sloping relatively gently to 16th Avenue. Low vegetation is growing over the entire site with a concentration of large trees in the southeast corner.

With the exception of a minor amount of fill material near 15th Avenue, practically all of the surface soil is a loose sand. The loose sand seems to be thinnest on the steeper slopes and becomes thicker on the lower and more gently sloping portions. There are also occasional outcroppings of sandstone and chert on the upper portions of the property.

Field Investigation

The field investigation included drilling a sufficient number of test borings with a track-mounted drilling rig at selected locations. Sampling was attempted by driving either a 2.425-inch or 2.00-inch diameter sampler into the desired strata with a 140-pound hammer dropping a distance of 30 inches. The information obtained by drilling and sampling was complemented by a geologic review of the site area.

Included in Appendix A are the logs of the test borings and the Site Plan indicating the locations of the borings and general geologic data.

Soil and Geologic Conditions

With the exception of the minor silty sand fill near 15th Avenue, almost all of the surface soil is a loosely compacted sand with varying amounts of silt and clay binder. Underlying the sand is hard chert. The depths to hard chert increases regularly from a few feet near 15th Avenue to over 50 feet near 16th Avenue. In locations where the chert is deep, the moisture content within the overlying sand tends to increase with depth. However, practically all of the sand encountered in the borings appeared to be loosely compacted. In addition, the contact zone between hard chert and sand is a wet layer of weathered chert or clay.

There are two important geologic units on the site. One is a relatively recent deposit of dune sand, and the other is very dense chert bedrock of Jurassic or Cretaceous Age. The bedrock is exposed in the cut slope above the site. The chert is in contact with dense greenstone (an altered volcanic rock). The chert appears to continue beneath the sand on the site while the greenstone does not.

It appears that the bedrock surface drops off very rapidly towards the bottom of the site where it is deeper than 55 feet. The history of the site is probably like that of much of San Francisco, where dunes have moved across the low lying foothills obscuring the once rugged topography. A test boring located near Ortega Street and Nineteenth Avenue reported by the U. S. Geological Survey on their map entitled "Geology of the San Francisco North Quadrangle, California," dated 1958, shows sand and sediments extending to a depth of 105 feet before bedrock was encountered.

The San Andreas Fault is the nearest active fault and is located about four miles southwest of the site. The most significant major earthquake in this area occurred on April 18, 1906, and was generated by that fault. Our recommendations are based on the fact that this site is located in a potentially high seismic zone. Seismic design criteria as suggested in the current Uniform Building Code should be included in the design of the proposed developments.

Laboratory Analysis

Selected samples were tested in our laboratory to evaluate their characteristics. The tests included moisture content and dry density determinations, grain size analysis, and triaxial compression tests. The information obtained from the tests was used to develop the recommended design criteria presented in this report.

The results of the laboratory tests are presented in Appendix A for your reference..

Discussion and Recommendations

This report and the following recommendations have been prepared specifically for the aforementioned project to be constructed on Block 1928B in San Francisco. Normal construction procedures and loadings for single family residences were assumed in the engineering analysis and were the bases for recommendations presented herein. The design values reported are based on the on-site materials. Should some other source of material be used, we should be notified to review and, if necessary, amend these recommendations.

Should there be any alterations of the proposed construction, we should be immediately notified to review those alterations and, if necessary, submit appropriately amended recommendations. To minimize conflicts between our recommendations and the final building plans, we recommend a thorough review of the building plans by this office prior to construction.

General

The site conditions may be divided into two discernible portions. The first includes Lots 1 through 13; the second includes Lots 14 through 32. The first area is underlain by hard rock at a relatively shallow depth. The second area is underlain by wet, loosely compacted sand exceeding 50 feet in depth in some areas. The sand is underlain by hard chert with a wet clay along the contact zone. Such conditions can be expected to exhibit varying degrees of creep and settlement depending upon the added loadings and the inherent characteristics of site conditions. The degree of investigation necessary to evaluate the area of Lots 14 through 32 far exceeds the scope of this report. The hazards of creep can only be evaluated through extensive laboratory testing and engineering analyses. These conditions are particularly sensitive to seismic loadings which may, under certain magnitudes and conditions, create large scale failures within wet sands underlain by shales. In any event, extraordinary foundation designs would be necessary to provide any degree of safety against long-term creep or instability under seismic loadings. Therefore, the recommendations presented in this report refer exclusively to the development of Lots 1 through 13 and exclude Lots 14 through 32.

Where fills are proposed, the on-site material may be used for constructing the fills provided it is free of vegetation and it is placed in accordance with the Recommended General Grading Specifications in Appendix A. The section of the specifications concerning areas to be filled should also apply to cut areas in that such areas should be scarified and recompacted as recommended at the time of construction. The specifications are intended to be used in conjunction with the recommendations presented herein, and should not be separated from this report without expressed written permission from this office. Since no plans for filling were available at the time of the investigation, any future plans for filling should be reviewed and, if necessary, we should submit appropriate recommendations.

Foundations

The recommended foundations for the proposed single family residences are piers and grade beams. The piers should be reinforced cast-in-place concrete with a minimum cross-sectional dimension of one foot. Such piers should penetrate at least three feet into the hard chert. This would result in an average overall depth of 15 feet. Such piers may be designed for an allowable bearing pressure of 5,000 pounds per square foot. This value may be increased by one-third for seismic or other temporary loads. The recommended piers may be "belled" if so desired. In addition, a resistive lateral pressure (passive) for the hard chert may be designed for by using an equivalent fluid weighing 300 pounds per cubic foot. The portion of the piers exposed to the near surface soils overlaying the rock should be designed for a lateral earth pressure (active) equivalent to a fluid weighing 50 pounds per cubic foot.

The grade beams should be structurally tied to piers in such a manner as to transfer the entire building loads to the piers. The grade beams may be placed in contact with the near surface soils if so desired.

Lateral Earth Pressures - Retaining Walls

Any facilities retaining earth, such as retaining walls, should be designed to accommodate lateral earth pressures. The design of these items may use an equivalent fluid weighing 50 pounds per cubic foot to estimate the active pressure. This value is for a drained condition in the near-surface soils. Drainage should be provided by a layer of crushed rock at least a foot thick between the facility and the retained soil mass. Suitable discharge should be provided by using a perforated pipe and an appropriate discharge location that will minimize erosion.

The foundations for retaining structures placed on the near-surface soil should be placed at least 18 inches below the adjacent grade. These areas should be cleared of all vegetation and ripped and recompacted to at least 90 percent of the maximum dry density as determined by A.S.T.M. Test Method D-1557-70. The recompaction should extend to a depth of at least two feet. The above footings may be designed for an allowable soil bearing pressure of 2,000 pounds per square foot. We recommend a thorough review of all retaining wall designs by this office, prior to construction.

Slabs-on-Grade

Areas to receive slabs-on-grade should be stripped of all vegetation and recompacted to at least 90 percent of the maximum dry density as determined by the A.S.T.M. Test Method D-1557-70. The recompaction should extend to a depth of at least one foot. No sand or crushed rock will be necessary beneath the slabs provided the supporting soil is sand. If this is not the case, a two-inch layer of sand should be placed beneath the slabs. All slabs should be reinforced with wire mesh.

Drainage

The site soils are very susceptible to erosion. Therefore, no water should be allowed to discharge or pond near the foundation line. In addition, provisions should be made to minimize the flow of runoff over the existing slope by constructing berms or lined trenches at the top of all slopes.

Limitations and Uniformity of Conditions.

The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the present time, Jo Crosby & Associates should be notified so that supplemental recommendations can be given. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to call to the attention of the architect and engineers from the project the information contained herein to effect their incorporation into the plans. The conclusions and recommendations contained herein are professional opinions derived in accordance with current standards of professional practice and no warranty is expressed or implied.

Harlan CONSULTING CIVIL ENGINEERS AND ENGINEERING GEOLOGISTS
ENGINEERS Suite 812 Hobart Building • 582 Market Street • San Francisco, California 94104 • (415) 986-8484

File No. H2-0034-F1
21 November 1972

Homestead Savings and Loan
c/o Chin and Hensolt, Inc.
Consulting Engineers
121 Second Street
San Francisco, California 94105

Attention: Mr. P. Chin

Subject: Lots 31 through 35, Block 1929-A
Golden Gate Heights Subdivision
San Francisco, California
SOIL AND GEOLOGICAL INVESTIGATION

Gentlemen:

This letter presents the results of our Soil and Geological Investigation conducted at Lots 31 through 35, Block 1929-A Golden Gate Heights Subdivision on Fourteenth Avenue between Aloha Avenue and Noriega Street in San Francisco, California. The purpose of this investigation is to explore the subsurface soil and rock conditions at the site, to recommend a type of foundation and provide foundation design criteria.

The site is to be developed with multiple story, woodframe, single family homes on each lot. As part of our investigation we utilized data contained in Gribaldo, Jones and Associates report to Bavone Construction Company, San Francisco, California on the Soil Investigation for Lots 14 through 17, Block 1929-A, dated 21 July 1970. Lots 14 through 17 immediately adjoin Lots 31 through 35 to the west. (The lot numbering system has been changed since the referenced report was made.)

Site Description

The location of the lots and the topographic features of the site are shown on a drawing prepared by the Western Subdivision Engineering Company, entitled "Topographic Survey, Block 1929-A Golden Gate Heights, San Francisco," dated 27 April 1970, Job No. 1806. The site slopes downward to the north and east from Fourteenth Ave., and is locally very steep, approaching a grade of 2:1 (horizontal to vertical). The site has a narrow flat area of varying width next to the curb at the top, then the steep down slope with a somewhat flatter slope at the northern rear third of the lots. The surface of the lots is very sandy and covered with grasses and weeds. There is a rock retaining wall, approximately 4 feet from the curb along the eastern portion of the site. There are no structures or improvements on the lots, although underground utilities appear to be within 5 feet of the curb line.

Field Investigation

The subsurface conditions were investigated by drilling one boring with a hydraulically operated rotary wash rig. Split spoon samples were taken in the sandy materials near the surface and a pitcher barrel was used to sample the rock at greater depth. The boring was drilled at the east part of the site in Lot 31, approximately 7 feet from the curb. The top of the hole was at an elevation of about 1 foot below the curb elevation. The hole was drilled with mud to keep it open during the exploration. A log of the boring is shown on Figure No. 1.

Subsurface Conditions

The previous investigation described in the referenced report, indicated a depth of sand of approximately 12 feet at the top of the slope and 15 feet at the bottom of the slope. However, in the boring drilled as part of this investigation, the rock was found to be 52 feet below the ground surface at the top of the slope. The sand was essentially dune sand containing some gravel fragments near the surface. This sand is predominantly loose near the surface, becoming denser with depth, uniformly graded and contains a small amount of silt. The sand appears to be saturated at greater depth, probably due to the recent heavy rains. Normally there is no water table on this site.

The dune sand is underlaid by sandstone and shale of the Franciscian Formation. Chert was found in the borings in the previous referenced report. The upper foot or two of the rock is fractured and weathered but is firm. The rock was weathered and hard below the weathered zone to the maximum depth explored, 67 feet. Soil samples recovered from below 20 feet were saturated. However, a permanent water level was not measured.

Laboratory Tests

Laboratory tests were performed to evaluate the strength of the rock. The results of the test are presented in the following table. The tests were performed as unconsolidated-undrained (quick) triaxial tests performed at a chamber pressure of 5760 p.s.f. (40 p.s.i.) The strengths were as follows:

Sample Number	Depth in Feet	Confined Compressive Strength - lbs/sq. ft.
5	55	14,400
6	62	8,350
7	66	16,000

CONCLUSIONS AND RECOMMENDATIONS

1. It appears that the bedrock surface underlaying the site is widely varying in elevation. Therefore it is recommended that before or concurrent with the start of construction, additional information regarding the depth of the bedrock be obtained.

Foundations

2. Because of the widely varying depth to rock, it is recommended that the houses be supported on drilled piers connected with grade beams. The piers should be drilled at least 5 feet into bedrock. The piers should be designed for end bearing in the bedrock where a design bearing pressure of 8,000 p.s.f. may be used for dead and live loads. This pressure may be increased by 1/3 for short term seismic or wind loadings.

3. The sand is loose near the surface and becomes denser with depth. Because of the substantial depth of the sand and it's looseness near the surface, it is recommended that a battered caisson be installed, sloping in the downhill direction, preferably at the lower end of the grade beams. This caisson will act to resist lateral forces which will be imposed on the foundation in a strong earthquake, including some movement of the looser sands near the surface as well as the reaction forces from the house.

4. Settlement of the piers designed as recommended above is not expected to exceed 1/2 inch for piers up to 3 feet in diameter loaded to the 8,000 lbs. per sq. ft. recommended above.

5. We have reviewed the foundation drawing prepared by Chin and Hensolt, Inc., Structural Engineers, No. 4, dated March 4, 1972. These drawings are in accordance with our recommendations exept that bells are shown for the piers and the recommended battered piers have not been shown. It is recommended that the structural engineer complete these modifications to the drawings before construction begins.

Slope Stability

6. The data obtained in the previous referenced investigation indicates that the slopes have an adequate factor of safety with respect to their stability. There could be some sloughing and movement of surface loose sand under a very heavy earthquake. If the building is founded on drilled piers and grade beams, as recommended, distress to the building should not result from such sloughing.

Grading

7. There should be no steepening of the existing slopes by placing fill near the top of the slope or by cutting near the bottom of the slopes. If any grading of the site is planned for any reason,

it is recommended that a qualified soil engineer be consulted so that an evaluation of the effect on the site can be made.

Drainage and Erosion

8. It is most important that the site be well protected from infiltration of water into the sand and accompanying saturation and that the site be protected from erosion. It is therefore recommended that continuous gutters be provided and that discharge from down spouts be carried into the street or stormdrain system.

9. The site should be graded so that surface water does not flow down the slopes and that water does not pond at any point on the sites. In general, heavy irrigation of the slopes should be prohibited.

10. Immediately after construction, is will be necessary to place good erosion control plantings along the sides of structures where sand is left exposed. This will be particularly important on the east side where a vacant area will still remain. Where ever possible, all existing vegetation should be left in place to help minimize erosion, both during construction and after the houses are completed.

11. If there are any spaces left between the houses, these spaces should be paved with concrete to ensure good surface run-off. Run-off between the houses and along the rear of the houses should be designed to discharge into a permanent drainage system or sewer system.

Construction

12. It is recommended that a qualified soil engineer observe all foundation installation operations. This is particularly important to assure that firm bedrock is reached and that the piers are installed in accordance with the intent of this report.

13. It is anticipated that substantial caving will occur, particularly if the holes are drilled at this time of year when there is some saturation in the ground. Casing will probably be required to stabilize the holes down to the bedrock elevation. Some difficulties with groundwater may be anticipated if the piers are drilled during the wet season. However, a standing groundwater table is not anticipated within the sand.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

14. The recommendations of this report are based upon the assumption that the subsurface conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the present time, Harlan Engineers should be notified so that supplemental recommendations can be given. The recommendations of this report are intended for the site described only and must not be extended to adjacent areas.

15. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the information and recommendations contained herein are called to the attention of the Architect and Engineers for the project and incorporated into the plans and that the necessary steps are taken to see that the Contractors and Subcontractors carry out such recommentations in the field.

16. The findings of this report are valid as of the present date. However, changes in the conditions of the property can occur with the passage of time, whether they be due to natural processes or to the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or the broadening of knowledge. Accordingly,

the findings of this report may be invalidated, wholly or partially, by changes outside of our control. Therefore, this report is subject to review and should not be relied upon after a period of one year.

Please let us know if you have any questions regarding this report.

Sincerely,

HARLAN ENGINEERS

Richard C. Harlan

Richard C. Harlan
Civil Engineer 11598

File No. H2-0034-F
21 November 1972

BORING LOCATION: LOT 31, 7 FEET FROM CURB

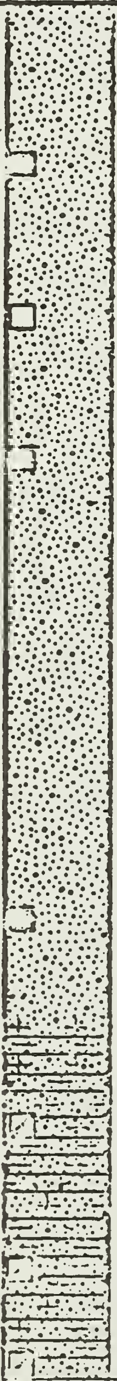
DEPTH IN FEET	SAMPLE NO.	LOG & LOCATION OF SAMPLE	Penetration Resistance Blows/ft	DESCRIPTION	IN-PLACE	
					DRY DENSITY pcf	MOISTURE CONTENT % dry wt
0				Drilled 11 November 1972		
						
	1-1		8	SAND, loose to medium dense, medium grained, moist, brown		
10						
				(Rock fragments)		
	1-2		16	No sample recovered Grading dense		
20						
	1-3		16	(Saturated sample)		
30						
40						
	1-4		69	Grading very dense		
50						
				SANDSTONE, highly weathered and fractured, hard, oxidized, red-brown		
	1-5			Thin soft clay seams		
60						
	1-6					
	1-7			(Some shale present)		
70				Boring Terminated at 67 Feet		

Figure No. 1 - Log of Test Boring No. 1

▣ Split Spoon Sampler

◩ Pitcher Barrel Sampler

Harlan ENGINEERS .CONSULTING CIVIL ENGINEERS AND ENGINEERING GEOLOGISTS
Suite 812 Hobart Building • 582 Market Street • San Francisco, California 94104 • (415) 986-8484

File No. H2-0034-F1
1 December 1972

Homestead Savings and Loan
c/o Chin and Hensolt, Inc.
Consulting Engineers
121 Second Street
San Francisco, California 94105

Attention: Mr. P. Q. Chin

Subject: Lots 31 through 35, Block 1929A
Golden Gate Heights Subdivision
San Francisco, California
ADDITIONAL FOUNDATION INFORMATION

References:
1. Soil and Geological Investigation
Letter Report, File No. H2-0034-F1
Dated 21 November 1972, by Harlan Engineers

2. Soil Investigation Report for 8 Lots
on 14th Avenue, North of Moraga Street
San Francisco, California by
Lowry & Associates, File No. 4123
Dated 23 July 1971

Gentlemen:

Following submission of our referenced letter report of 21 November 1972, you have provided us with information contained in the referenced Lowry & Associates report of 23 July on the subject lots in Golden Gate Heights Subdivision. In general, the information contained in the Lowry report confirms and amplifies the information contained in our report of 21 November 1972. The depths to rock are shown on the attached Figure No. 1. Based upon the information contained in the Lowry Report and our own investigation of the site, we judge that the maximum depth to rock occurs in Lot 32 where Boring B2 of the Lowry investigation found rock at a depth of 60 feet. The caisson in this vicinity would have to be at least 65 feet long in order to meet the requirements of our recommendations for 5 foot penetration into rock. Based on our extrapolation of the other subsurface data, we anticipate that the depth to rock at the rear of Lot 32 will be on the order of 50 feet. Since the houses are to be supported on caissons drilled 5 feet into bedrock, it is not necessary that the depth to bedrock be determined at the rear of Lot 32 at this time. However, it will be necessary that the depths to rock be confirmed and observed by a geologist or qualified foundation engineer during construction.

It is recommended that construction of the foundations be carried out in accordance with the recommendations in our report of 21 November 1972, as shown on Chin & Hensolt drawing No. 4 for the subject project, with the revisions dated November 21, 1972. This drawing is in conformance with the recommendations of our report.

It is noted that the caissons at the top of the hill are 30 inches in diameter. It is not anticipated that any of the up-hill caissons will exceed 75 feet in length. Therefore the planned diameter of 30 inches is appropriate. However, should any of the downhill caissons, planned to be 24 inches in diameter, exceed 60 feet in length, it is recommended that they be reamed to 30 inch diameter in order to conform to the San Francisco Building Code requirement that the length of the drilled caisson not exceed the diameter multiplied by 30. (Section 2810.B.1 San Francisco Building Code edition of July 1, 1970)

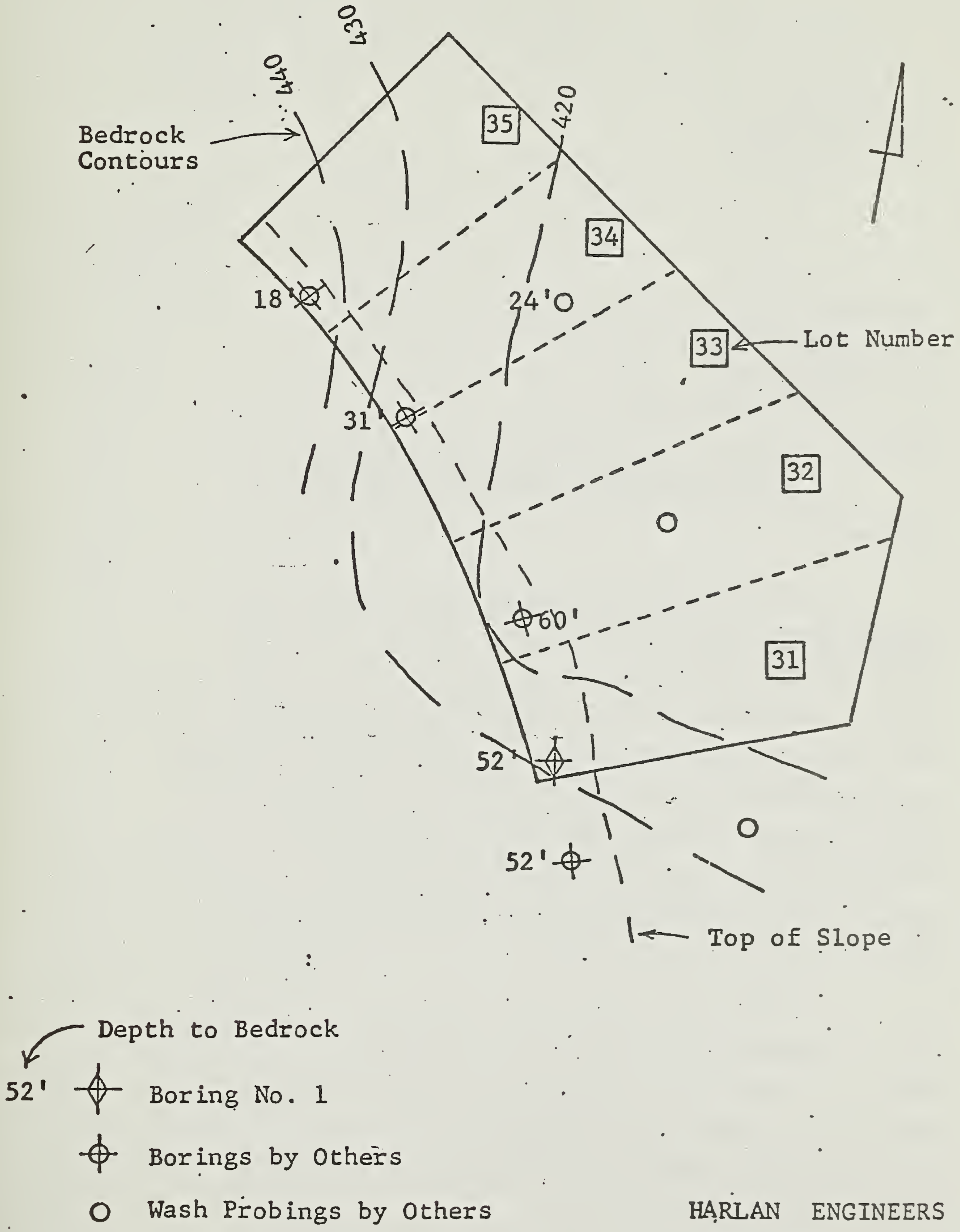
Section 305A of the San Francisco Building Code, special inspection, requires continuous inspection of caissons on this project. This inspection will confirm that the caissons are installed in accordance with the recommendations of this report and that the requirements of the San Francisco Building Code are met.

If you have any further questions regarding this project, please let us know.

Very truly yours,

HARLAN ENGINEERS

Richard C. Harlan
Civil Engineer 11598



HARLAN ENGINEERS
H2-0034-F1
December 1, 1972

FIGURE NO. 1

JO CROSBY & ASSOCIATES 756 CALIFORNIA STREET (415) 969-3268
MOUNTAIN VIEW, CALIFORNIA 94040

File No. 2194 - L5
January 4, 1972

Homestead Savings & Loan Association
c/o Chin and Hensolt
121 Second Street
San Francisco, California

Subject: Stability study for Portions of Block 1928-B
Golden Gate Heights, San Francisco, California

Gentlemen:

We have performed additional field work and analysis on Lots 14 through 32 of Block 1928-B to supplement our previously issued Foundation Investigation report dated August 25, 1971. The additional work included drilling and sampling, specialized laboratory testing, and engineering analyses. The purpose of this supplemental investigation and analysis was to evaluate the static and dynamic stability of the deep sand deposits that were encountered during the initial investigation. The scope of our work also included developing recommendations for the proposed residential structures.

The majority of the samples from the site were obtained from the vicinity of Boring Number 4, as indicated on the enclosed Site Plan. This location was chosen because it was representative of the site soils and because it provided ease of access by the drilling equipment. Rotary wash borings were used to minimize caving in the loose surface sands while obtaining samples from depths of between 9 and 15 feet. Ordinarily the samples were obtained by hydraulically pushing a 2.875 inch I.D. sampler into the desired soil strata. The samples were then capped with wax to minimize disturbance and loss of moisture until they were to be tested in the laboratory.

The laboratory testing included grain-size analysis, moisture-density determinations, and dynamically loaded triaxial compression tests. Other soil charactertistics were obtained from our previous work concerning this property. The dynamic analysis of the samples indicated that the site soils would undergo liquefaction under moderate to severe seismic loads. However, the soils tested continued to exhibit a capacity for accepting additional stress with moderate strain for a finite period after liquefaction had occurred. Therefore, we feel that the site material should react well under all but moderate to severe earthquake conditions.

RECOMMENDATIONS AND CONCLUSIONS

We have discussed two methods of developing the site with representatives of Chin & Hensolt. They have requested that we present recommendations for both alternatives so that the final choice can be made with the benefit of all available data.

The two alternatives are pier and grade beam foundations, and normal foundations placed on a substantial thickness of recompacted site soils. The purpose of either of the alternatives is to minimize the effect of ground movement on the structures. The piers and grade beams accomplish this isolation by founding the structures on deeper and more stable soil strata. The "mat" procedure attempts to spread any ground displacement over a uniform area and thereby minimize differential movements in the supporting soil layer.

Foundation Alternative I, Piers and Grade Beams

The planned one- and two-story residential structures may be founded on piers and grade beams. The piers should extend a minimum of 15 feet below the existing surface, or at least 3 feet into clayey sand or weathered rock, whichever is shallower. We recommend that a representative from our office be present at the time the holes are drilled to evaluate the material encountered and to recommend overall embedment depths for the individual piers. We also recommend that a representative from the structural engineering firm involved be present for similar evaluations from a structural viewpoint. The allowable soil bearing pressure for piers constructed in accordance with our recommendations is 4500 pounds per square foot. This value may be increased 500 pounds per square foot for each additional two feet of penetration into clayey sand or weathered rock to a maximum allowable bearing pressure of 8,000 pounds per square foot. The recommended design bearing value may be increased by one fourth for seismic or other temporary loads. The piers may be belled if so desired. It should be realized that "belling" pier holes in the sandy soil may be difficult and may require some method of support to minimize caving.

In view of the existing sloping topography and the nature of the site material, we recommend that the piers be designed for a downhill lateral pressure equivalent to a fluid weighing 125 pounds per cubic foot. This value is approximately equal to the at-rest pressure exerted by the soil strata. The at rest pressure should be applied to the piers over an area extending from the ground surface to about 10 feet below the ground surface.

A resistive (passive) earth pressure equivalent to a fluid weighing 300 pounds per cubic foot may be applied to the section of the piers extending more than ten feet below the ground surface or into weathered rock. The resulting resistive force should be used to counteract the recommended design pressures as well as all other lateral pressures.

Foundation Alternative II, Recompacted "Mat"

We recommend that at least five lots be prepared at a time using the "mat" procedure to maximize the capabilities of spreading any movements of the site soils. The area to be developed should be stripped of all soil containing vegetation or other contamination and excavated to the desired elevation. The exposed surface should be compacted to at least 90 per cent of the maximum dry density as determined by the A.S.T.M. Test Procedure D-1557-70. Either the site material (provided it is free of contamination and approved by the office) or some suitable import (similarly free of contamination and approved by this office) may be used for the fill material. The fill should be compacted to at least 90 per cent of the maximum dry density as determined by the .A.S.T. M. Test Procedure D-1557-70, and should be placed in accordance with the "Recommended General Grading Specifications" in Appendix B. . The recommended minimum thickness for the fill is 5 feet and the thickness should not vary more than 2 feet beneath the total building areas.

Provided the fill mat is prepared in accordance with our recommendations, continuous footings may be used for wall loads and spread footings may be used for column loads. All footings should be placed a minimum of 18 inches below the lowest adjacent grade. The footings should have a minimum bottom dimension of 12 inches. Provided the foundations are constructed in accordance with the recommendations, they may be designed for an allowable soil bearing pressure of 1500 pounds per square foot. This value may be increased by one-fourth for seismic or other temporary loads.

Lateral Earth Pressures - Retaining Walls

Any facilities retaining earth, such as retaining walls, should be designed to accommodate lateral earth pressures. The design of these items may use an equivalent fluid weighing 50 pounds per cubic foot to estimate the active pressure. This value is for a drained condition in the near-surface soils. Drainage should be provided by a layer of crushed rock at least a foot thick between the facility and the retained soil mass. Suitable discharge should be provided by using a perforated pipe and an appropriate discharge location that will minimize erosion.

The foundations for retaining structures placed on the near-surface soil should be placed at least 18 inches below the adjacent grade. These areas should be cleared of all vegetation and ripped and recompacted to at least 90 per cent of the maximum dry density as determined by A.S.T.M. Test Method D-1557-70. The recompaction should extend to a depth of at least two feet. The above footings may be designed for an allowable soil bearing pressure of 1500 pounds per square foot. We recommend a thorough review of all retaining wall designs by this office, prior to construction.

Slabs-on-Grade

The use of pier and grade beam foundations will necessitate the use of structural flooring. Areas to receive slabs-on-grade should be stripped of all vegetation and recompacted to at least 90 per cent of the maximum dry density as determined by the A.S.T.M. Test Method D-1557-70. The recompaction should extend to a depth of at least one foot. No sand or crushed rock will be necessary beneath the slabs provided the supporting soil is sand. If this is not the case, a two-inch layer of sand should be placed beneath the slabs. All slabs should be reinforced with wire mesh. A moisture-proof membrane such as Visqueen is recommended beneath slabs in living areas.

Drainage

The site soils are very susceptible to erosion. Therefore, no water should be allowed to discharge or pond near the foundation line. In addition, provisions should be made to minimize the flow of runoff over the existing slope by constructing berms or lined trenches at the top of all slopes. The future stability of the existing slopes will depend largely upon proper and efficient drainage facilities. Such facilities should be reviewed and inspected by a representative of this office.

Limitations and Uniformity of Conditions

The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the present time, Jo Crosby & Associates should be notified so that supplemental recommendations can be given. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to call to the attention of the architect and engineers from the project the information contained herein to effect their incorporation into the plans. The conclusions and recommendations contained herein are professional opinions derived in accordance with current standards of professional practice and no warranty is expressed or implied.

Very truly yours,

JO CROSBY & ASSOCIATES

Roy E. Moore
Jo K Crosby
Jo K. Crosby
C.E. 13063

REM:ln

RECOMMENDED GENERAL GRADING SPECIFICATIONS

1.1 General Description

1.11 These specifications have been prepared for general grading and site development of this project. Jo Crosby & Associates, hereinafter described as the Soil Engineer, should be consulted at least 4 days prior to any work connected with site development. The Grading Contractor should be made aware of the existence of these specifications.

1.12 This item shall consist of all clearing and grubbing, preparation of land to be filled, filling of the land, spreading, compaction, density testing of the fill, and all subsidiary work necessary to complete the grading of the filled areas to conform with the lines, grades and slopes as shown on the accepted plans.

1.13 In the event that any unusual conditions, not covered by these specifications, are encountered during grading operations, the Soil Engineer shall be immediately notified.

2.1 Clearing, Grubbing and Preparing Areas to be Filled

2.11 All timber, logs, trees, brush, abandoned buildings, debris and other rubbish shall be removed, piled or burned or otherwise disposed of so as to leave the areas that have been disturbed with a neat and finished appearance free from unsightly debris. No burning shall be permitted in the area to be filled.

2.12 All loose soil and vegetable matter shall be removed from the surface upon which the fill is to be placed, and the surface shall then be plowed or scarified to the recommended depth, and until the surface is free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction by the equipment to be used.

2.13 The original ground upon which the fill is to be placed shall be plowed or scarified to the recommended depth.

2.14 After the area to receive the fill has been cleared, plowed or scarified, it shall be disced or bladed until it is uniform and free from large clods, brought to the proper moisture content by adding water or aerating, and compacted to not less than 90% of maximum dry density as determined by ASTM Test Procedure No. D 1557-70.

2.15 Loose soil removed in accordance with paragraph 2.12, if free of vegetable matter and other deleterious material, may be incorporated in compacted fill.

3.1 Materials

3.11 The materials for the engineered fill shall be approved by the Soil Engineer at least 4 days before commencement of grading operations. Any imported material must be approved before being brought to the site. The materials used shall be free of vegetable matter and other deleterious substances. Rocks up to 2 feet in their largest dimension will be permitted in mass fills provided they are not placed within 5 feet of finished grade and that nesting is avoided. Rocks larger than 2 feet will not be permitted unless approved in writing by the Soil Engineer.

3.12 Native soil, free of organic or other deleterious material, may be used as fill.

3.13 The Contractor shall notify the Soil Engineer at least four working days in advance of his intention to import soil from any source outside the project areas, and shall permit the Soil Engineer to sample as necessary for the purpose of making tests to establish the qualities of these materials. The Contractor shall be responsible for all costs incurred in sampling, testing, analyzing, and otherwise determining the applicability of the materials for use on the site. The work shall be performed by the Soil Engineer.

4.1 Placing, Spreading and Compacting Fill Material

4.11 The selected fill material shall be placed in layers which, when compacted, shall not exceed 6 inches in thickness. Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to provide uniformity of material in each layer.

4.12 When fill material includes rock, no rocks larger than 2 feet in their largest dimension will be allowed to nest and all voids must be carefully filled with small stones or earth and properly compacted. No such rocks will be permitted closer than 5 feet below the finished grade.

4.13 When the moisture content of the fill material is below that sufficient to obtain the required density, water shall be added. When the moisture content of the fill material is above that sufficient to obtain the required density, the fill material shall be aerated by blading or other satisfactory methods.

4.14 After each layer has been placed, mixed and spread evenly it shall be thoroughly compacted to not less than 90% of maximum dry density as determined by ASTM Test Procedure No. 1557-70.

4.15 Compaction of each layer shall be continuous over its entire area and continued until the required density is obtained.

5.1 Tests

5.11 The standard test used to define maximum densities of all compaction work shall be the ASTM Test Procedure No. D 1557-70. All densities shall be expressed as a percentage of the maximum dry density obtained in the laboratory by the foregoing standard procedure.

5.12 Field density tests shall be made by the Soil Engineer. The number of tests will be determined by the Soil Engineer or applicable specifications.

JO CROSBY & ASSOCIATES
CIVIL ENGINEERS - GEOLOGISTS
756 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94040
P. O. BOX 4220
TELEPHONE (415) 969-3268

File 2543-26
February 20, 1974

Mr. Morgan Howell
1625 B Street
Hayward, California

Dear Mr. Howell:

Subject: Slope Stability - Golden Gate Heights

I am enclosing a sketch showing the extent of compacted fill which we would require in the Golden Gate project. The necessity of five feet compacted fill beneath the building would be to allow a normal footing rather than drilled piers for support of the structure. The recompacted fill on the slope would be to replace the sliding resistance that would be lowest through the proposed grading.

This is somewhat idealized, but in general, we would need about fifteen feet of horizontal thickness near the house elevation in order to prevent slides from above. I have not considered retaining walls since their long-term stability in this ground may be questionable and their cost could be extreme.

Very truly yours,

JO CROSBY & ASSOCIATES

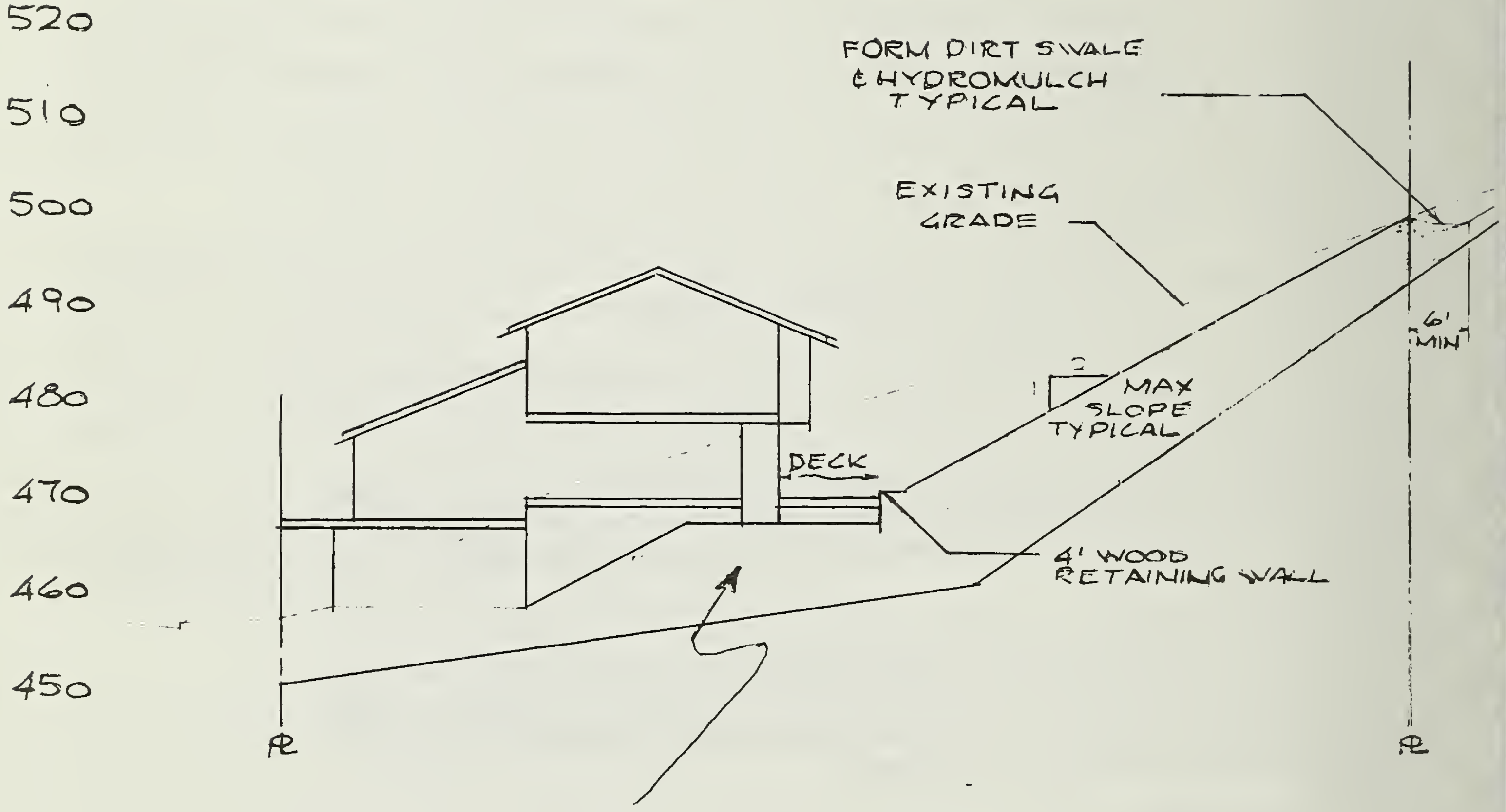
Jo K. Crosby

Jo K. Crosby
C.E. 13063

JKC:sj

Enclosure

xc: Hawaii San Francisco Investment Company



Typical buttress shown by shading
Minimum dimensions 8' at top, 15' at base
5' minimum thickness below structure

TYPICAL SECTION
GOLDEN GATE HEIGHTS

JO CROSBY & ASSOCIATES
CIVIL ENGINEERS & GEOLOGISTS

SCALE:
SHEET 10

JO CROSBY & ASSOCIATES
CIVIL ENGINEERS - GEOLOGISTS
756 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94040
P. O. BOX 4220
TELEPHONE (415) 969-3268

File 2543-33
October 18, 1974

Hawaii and San Francisco Investment Co.
107 Jackson Street
Hayward, California

Attention: Mr. William Ghidossi

Subject: Summary of Foundation Recommendations
Block 1928-B, Golden Gate Heights
San Francisco, California

Gentlemen:

This letter is to confirm our telephone discussion with Mr. William Ghidossi of your organization on October 16, 1974.

Because the foundation recommendations for the subject project have been submitted over a period of three years, and because they have been discussed and revised so many times during that period, it was agreed to summarize and clarify the recommendations as finally incorporated into the plans in an effort to facilitate review by the City of San Francisco Building Department.

The following documents containing foundation recommendations for the subject project have been submitted between the period of August 25, 1971, through October 17, 1974, and are attached to the civil engineers copy of this letter for presentation to the Building Department.

A. Bound report to Homestead Savings and Loan Association, Foundation Investigation, dated August 25, 1971.

B. Bound report to Homestead Savings and Loan Association, Stability Study for Portions of Block 1928-B, dated January 4, 1972.

C. Letter to Mr. Morgan Howell, Slope Stability, dated February 20, 1974, with attached drawing dated 2/13/74.

D. Letter to Hawaii and San Francisco Investment Company, Pier Design Criteria, dated April 22, 1974.

E. Letter to Western Subdivision Engineering Company, Grading Plan Review, dated August 2, 1974.

F. Letter to Morgan D. Howell, A.I.A., Drainage Terrace Width Revision, dated August 12, 1974.

G. Letter to Hawaii and San Francisco Investment Company, Friction Pier Design Criteria, dated October 17, 1974.

Many of the recommendations in the above-listed documents are superseded by recommendations in subsequent documents. However, no document has been superseded in its entirety. All information and recommendations contained in the attached documents are to be considered applicable unless superseded by a later and conflicting recommendation. For all conflicts between recommendations, the recommendation with the latest date is to be considered to apply.

To facilitate review, the following summary has been made to point out the recommendations adopted in the end and incorporated into the plans:

1. Letter dated August 12, 1974, amends letter dated August 2, 1974 and drawing dated 2/13/74: recommended minimum width of the proposed drainage terrace in the slope is 2.5 feet rather than 6 feet.

2. Letter dated August 2, 1974, amends drawing dated 2/13/74: recommended slope between upper and lower rows of houses should be no steeper than 2:1, horizontal to vertical, with the width of the drainage terrace being included in the horizontal distance. In other words, the overall slope, top to toe including the drainage terrace, should be no steeper than 2:1.

3. Letter dated February 20, 1974, with drawing dated 2/13/74, is to clarify and amplify the recommendations for the recompacted "mat" submitted on Page 4 of bound report dated January 4, 1972. As indicated on the drawing, a certain portion of the slope behind the proposed houses, as well as a certain thickness below the houses, should be excavated and recompacted. In general, all other recommendations regarding the recompacted "mat" submitted in the January 4, 1972, report still apply.

4. Page 5 of bound report dated January 4, 1972, recommends that retaining wall footings be designed for a maximum allowable soil bearing pressure of 1500 psf. This value is to supersede the figure of 2000 psf previously submitted on Page 6 of bound report dated August 25, 1971.

5. Our letter dated October 17, 1974, is to revise and clarify the pier design criteria previously submitted in our bound reports dated August 25, 1971, and January 4, 1972, respectively, and our letter dated April 22, 1974. Piers are to be designed to carry vertical loads by friction in accordance with the criteria submitted in our letter dated October 17, 1974, and are to be designed to resist lateral forces in accordance with the criteria submitted in our letter dated April 22, 1974, which supersedes the criteria for lateral design submitted on Page 3 of bound report dated January 4, 1972.

6. Our letter dated April 22, 1974, is to revise and clarify Page 3 of bound report dated August 25, 1971, to state that between the surface dune sand and the bedrock lies a substantial thickness of stable silty/clayey sand,

7. The first paragraph under the heading General on Page 4 of bound report dated August 25, 1971, describes soil and geologic conditions as they appeared to be at the conclusion of our initial exploration, and states that Lots 14 through 32 should not be developed without additional extensive laboratory testing and engineering analysis. These statements have been superseded by the information and recommendations in bound report dated January 4, 1972, and in all of the letters submitted with this summary. If the above-mentioned recommendations are properly carried out, it is our opinion that all of the Lots in Block 1928-B may be satisfactorily developed for the proposed construction.

8. Page 2 of bound report dated January 4, 1972, contains the statement "The dynamic analysis of the samples indicated that the site soils would undergo liquefaction under moderate to severe seismic loads.... Therefore, we feel that the site material should react well under all but moderate to severe earthquake conditions."

   The above opinion that the sand might liquify under seismic loading was based on the assumption that the sand would be saturated. This is a condition which is not plausible at the subject site. Therefore, our revised opinion is that the on-site soil will not liquify under seismic loading. We do anticipate a loss of strength under severe seismic loading, and our recommended foundation design criteria take this into consideration. It is our opinion that even during severe seismic loading--assuming proper execution of all foundation recommendations and proper construction of the building--that damage to the proposed structures will be no greater than to comparable structures under comparable seismic loading.

We hope the above summary serves somewhat to clarify the foundation recommendations as adopted and will help to facilitate review. We acknowledge that our recommendations submitted in such piecemeal fashion are less organized than we might wish. Therefore, we invite the civil engineer with the city building department who reviews the attached plans to call us should he have any questions regarding our recommendations.

Warranty

The contents of this letter and of the enclosed listed documents consist of professional opinions made in accordance with current principles and practices in the field of soils engineering and geology. We have made all reasonable effort in exploring the subject site to determine the geologic and soil conditions and to detect any incipient or near-incipient failures. Our findings indicate there are no such conditions which preclude the satisfactory development of the site. It is our opinion that if the recommendations of this report are carried out, as well as any revised recommendations we might make in the course of our inspections during construction, that the subject site is suitable for the proposed development. This warranty supersedes all other warranties either express or implied.

Very truly yours,

JO CROSBY & ASSOCIATES

Jim McNely

Jim McNely

Jo K. Crosby
C.E. 13063
E.G. 357

JM:mto

cc: Western Subdivision Engineering Company
Morgan D. Howell, A.I.A.
Mr. Ken Smetts

Enclosure: (Documents enclosed with Western Subdivision Engineering Company copy only)

HAWAII & SAN FRANCISCO INVESTMENT COMPANY
P. O. BOX 3336 • HAYWARD, CA 94540
107 JACKSON STREET (415) 886-4600
LICENSE No. 171755

April 24, 1975

Dr. Selina Bendix
Environmental Review Office
Department of City Planning
100 Larkin Street
San Francisco, California 94102

Dear Ms. Bendix:

Reference is made to item #1 of your letter dated April 14, 1975 to Mr. Wally Stokes concerning additional information required for the Golden Gate Heights DEIR.

Our plans for developing Block 1860 B are based on importing sand fill from Block 1928 B in lifts of 5' to 15 feet to more or less level the site. To achieve this the only anticipated excavation on 1860 B will be the leveling of the chert ridge on the north end of the site. Information obtained from test borings and contained in the soils engineers report indicate that this material is capable of being "cut" or "ripped" by heavy earthmoving equipment. We are therefore, anticipating no need for blasting.

This material will not be removed from the site but will be utilized with the import fill.

Yours very truly,

HAWAII & SAN FRANCISCO
INVESTMENT CO.

William R. Ghidossi

William R. Ghidossi
Assistant Vice President

WRG/dj

JO CROSBY & ASSOCIATES
CIVIL ENGINEERS · GEOLOGISTS
756 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94040

P. O. BOX 4220
TELEPHONE (415) 969-3268

File 2543-16
April 5, 1974

Hawaii and San Francisco Investment Company
107 Jackson Street
Hayward, California

Attention: Mr. William Ghidossi

Gentlemen:

Subject: Foundation Exploration
Block 1860 B
San Francisco, California

Upon your request and authorization, we have conducted a foundation exploration of the subject site based on a copy of the parcel map received from the architect. The work was performed under the conditions of our proposal to you dated February 12, 1974.

The enclosed report contains our findings and recommended foundation design criteria. It is our opinion that the soil and geologic conditions, using adequate design criteria and construction procedures, are suitable for the proposed development.

Very truly yours,

JO CROSBY & ASSOCIATES

Jim McNely

Jo K. Crosby
C.E. 13063

JM:sj

Enclosure

SOIL EXPLORATION

Site Description

The site is designated as Block 1860 B and is located in the Sunset District, a residential area in the southwest portion of the city of San Francisco, California. The site is approximately 2.5 acres in area bounded by Fifteenth, Lawton, Lomita and Aloha Avenues and situated on a steep hillside sloping toward the west. The site itself is the location of an old rock quarry, the bottom of which slopes downward on the order of 15 feet from the south end of the site to the north.

The bottom of the quarry is somewhat irregular topographically and is covered with grass and weeds. There are some existing piles of loose sand and rubble and a few truckloads of large concrete rubble (old street curbs). The surface of the quarry is chert and sand. Both the north and the south ends of the site are bordered by chert outcrops ranging in height from approximately 5 to 35 feet.

The neighborhood has been developed for many years consisting generally of single-family dwellings comparable to those proposed for the subject site.

Purpose and Scope

The site exploration described in this report was conducted to examine the subsurface and geologic conditions and to obtain information from which to develop design criteria for certain elements of construction which might be influenced by the subsurface conditions.

It is our understanding that the proposed development will consist of placing on the order of 5 to 15 feet of fill and of constructing thirty-three 2- and 3-story wood frame single-family dwellings.

Our exploration was based on verbal descriptions of the project from Mr. Morgan D. Howell and on a copy of the parcel map of Block 1860 B. Our report is based on this information, on our field and laboratory findings, and on the plan titled, Topographic Survey by Western Subdivision Engineering Company, Job No. 2254, dated 3/27/74. The recommendations presented herein are, in the absence of more detailed plans, limited to the general aspects of construction presently available to us. We should be informed of any deviations from the stated basis of our work so additional recommendations can be given prior to the implementation of such changes.

It is not uncommon to encounter unforeseen variations in the soil conditions and related structural members in the course of construction. It is recommended that for such cases a contingency fund be set up to accommodate the charges which may result from required inspections, engineering services, and reviews necessary during the construction phase to obtain a properly constructed project.

Field Exploration and Laboratory Analysis

Based on the plans received, on discussions with the architect, and on our visual inspection of the site, our decision was to drill eleven test borings ranging in depth from 3 to 32 feet at selected locations on the site. We believe that adequate soils information has been obtained to provide reasonable foundation recommendations, weighing structural design considerations against cost of further exploration.

The test borings were advanced with a six-inch diameter continuous flight auger. Representative drive samples (2.4-inch I.D.) and disturbed auger samples were taken at selected intervals or at major strata changes. The samples were subjected to detailed visual inspection and classification in our laboratory. Based on these observations, selected samples were tested for primary index properties, (moisture and density) and for strength properties (direct shear). Boring locations, site plan, boring logs, and laboratory test results are attached as Appendix A of this report. The attached site plan is based on the previously mentioned plan of topographic survey and on a site plan by Western Subdivision Engineering Co,, dated February, 1974, showing proposed building locations.

The conditions indicated on the attached boring logs represent the soil conditions at the date and locations indicated. It is not warranted that they are representative of soil conditions at other locations or at other times.

Geology

An engineering geologist from our office visited the site to make firsthand observations of the visible geological features at the site and in the vicinity. The following discussion and the Geology Map in Appendix A are based on this site inspection, data from the borings, research into published geological maps and writings, and on the previously mentioned plan titled, Topographic Survey by Western Subdivision Engineering Company.

Bedrock in the vicinity of the site is comprised of Jurassic and Cretaceous Age siliceous marine sediments, known as the Franciscan Formation. These sediments have been lithified into beds of chert interbedded with shale. Folding and uplift along with subsequent weathering of overlying materials have created knobs and hills of this more resistant chert. Deposits of Quaternary Age dune sand cover the flanks of the chert, and some deposits of artificial fill are located in the central portion of the site (see Geology Map). Distinct bedding was observed over the entire site and the prevailing orientation is north-south. However, determination of detailed structure was difficult due to the random orientation of the numerous small folds. Joint spacing is close and orientation is similar to bedding with a northern orientation, but they are inclined steeply (75 - 90°) to the west. The overall stability of the chert seems to be relatively good as noted by the good condition of some near vertical cut faces and rock pinacles still standing on the site.

No unusual ground water conditions were noted.

Although active faults are not located on the site, it is located in a seismically active region as with the greater San Francisco Bay Area. The City College Fault, the San Bruno Fault and the San Andreas Fault Zones are located approximately 3/4, 2.5 and 5 miles to the southwest, respectively. The Hayward Fault Zone is located approximately 16 miles to the northeast. All faults have a northwest-southeast orientation. The San Andreas and Hayward Fault Zones are considered active by both the U. S. Geological Survey and the California Division of Mines. Tectonic creep has been observed on both faults and numerous seismic events have been observed and recorded. Damaging earthquakes occurred in 1836 and 1868 on the Hayward Fault Zone and in 1906 and 1957 on the San Andreas Fault Zone.

Due to the absence of known active faults in the immediate vicinity of the site, surface rupture or faulting is not expected. However, due to the seismicity of the region, vibration is anticipated during seismic events. Densification and subsequent settlement from vibration can occur in naturally compacted sands, which may cause problems if not corrected.

Vibration of structures with low elasticity (brick, concrete) can cause major structural damage. However, wood frame structures with higher elasticity generally receive only minor damage in most moderate seismic events. Proper structural design of the buildings can minimize the effects of the vibration. Liquefaction and lateral spreading are not anticipated at this site.

Soil Conditions

The chert bedrock described in the previous section on geology either is exposed or lies within one or two feet of the surface over approximately three-fourths of the site. The remaining one-fourth of the site is covered with a clean, poorly graded, fine sand which is generally moderately dry and in a moderately loose condition.

The two major areas covered with sand are (a) a pile of sand fill on the order of 100 by 200 feet in plan dimension ranging from 3 to 11 feet in depth and located at the middle of the west side of the site, and (b) what appears to be an old ravine located at the southwest corner of the site filled with sand to a depth of seven feet at the location of Boring 5 and to a depth of 31 feet at Boring 6.

Both the north and the south ends of the site are ringed by crescent-shaped ridges of chert, each on the order of 300 feet long and ranging approximately from 50 to 100 feet wide by 5 to 35 feet high. The north side of the north ridge is covered with loose dune sand, which is on the order of 5 to 20 feet wide.

The above described sand areas and chert ridges are shown in relation to the proposed structures on the attached site plan.

These features cannot be located accurately enough at this time to be used to determine exact transition points on individual foundations, but they are sufficiently accurate to call attention to potential problem areas and to permit approximate quantity calculations.

If exact location of these features are required later for the purpose of special foundation designs for particular cases, they may be determined during the construction phase.

DISCUSSION AND RECOMMENDATIONS

General

This report was prepared specifically for the proposed development located in the vicinity of Fifteenth and Lawton Avenues in San Francisco as previously described under the heading Site Description at the beginning of this report. Normal construction procedures were assumed throughout our analysis and represent one of the bases for the recommendations presented henceforth. Our design criteria are based on the soils encountered on the site and on Block 1928B; therefore, we should be notified if some other soil be proposed to be used, that we might modify and amend our recommendations.

Should there be an alteration of the proposed construction from the stated basis of this report, we should be informed that we may review such changes and submit additional recommendations. It is recommended that we review the final plans prior to construction to minimize discrepancies between our recommendations and said plans. Should there be any conflict between the following recommendations and the General Grading Specifications presented in Appendix B, the recommendations in the body of the report are to supersede the general grading specifications in the appendix.

The subject site is characterized by an unusually large number of sharply contrasting soil and rock features. One of the major purposes of the following recommendations is to attempt to modify the adverse effects of the sharp contrasts on the proposed structures.

Site Preparation and Grading

We understand that it is desired to import a relatively large quantity of excess sand from Block 1928B and to place it as compacted fill on the subject site. The resulting fill might be on the order of 5 to 15 feet deep.

Due to the irregularity of the existing bottom of the quarry, regarding both topography and materials, the subgrade reaction may be expected to vary considerably from one area to another. One of the prime considerations during grading of this particular site will be the development of a relatively uniform subgrade reaction beneath any individual structure. The following site preparation guidelines are proposed to aid in achieving this end:

1. One zone of varying subgrade reaction, and thereby a zone of potential differential settlement, is the transition between the chert quarry bottom and the old sand-filled ravine previously mentioned under Soil Conditions and located approximately as the zone indicated as Deep Sand on the attached site plan. It is recommended that any portion of the sand-filled ravine falling within an imaginary line extending downward at an angle of 45° from any structural footing should be excavated and recompacted to such depth that the total thickness of recompacted sand and imported fill be no less than 15 feet.

2. The existing waste piles of sand and rubble previously dumped on the site should be spread to a thickness of no greater than one foot. Any wood or trash should be removed and the lift should be moistened and track-walked with a bulldozer. The amount of topsoil, grass

and weeds on the site is so slight that they may satisfactorily be scraped from the surface and mixed and spread with the rubble during this operation.

3. One of the potentially most critical conditions on the site regarding differential settlement is that in which part of a structure might be supported on deep fill and another part on some of the exposed rock protruding above the bottom of the existing quarry, such as the ridges of chert previously discussed under Soil Conditions and located approximately as shown on the attached site plan. In order to minimize the potential differential settlement, the protruding rock should be cut down to the level of its base, and the resulting broken rock should be spread in a uniform layer over the remainder of the site and track-walked with a bulldozer. The first lift of sand fill placed over the layer of broken rock should be rolled with a vibratory roller prior to adding moisture in order to vibrate sand into the voids between the rocks.

   The rock is relatively hard, and cutting it down may prove difficult. Our borings and observations of the degree of fracturing give some indication that it may be feasible to cut down the rock with heavy earth moving equipment such as a Caterpillar D-9 bulldozer with rippers. However, it should be noted that even if the rock proves to be workable over a large area, special difficulties may be encountered in smaller excavations such as utility trenches.

4. The approximately 100 by 200 foot pile of existing sand fill, located at the middle of the west side of the site as previously mentioned under Soil Conditions, should be excavated down to rock and should be uniformly spread and compacted in accordance with the criteria set forth in Appendix B.

5. The loose dune sand on the north side of the chert crescent located at the north end of the site, as previously mentioned under Soil Conditions, should be treated as discussed in Paragraph 1 or in Paragraph 4 above, depending upon the depth of the sand.

6. When the above site preparation has been accomplished, the proposed sand fill may be imported and placed in accordance with the criteria set forth in Appendix B. The sand should be placed in layers not to exceed eight inches in thickness, should be liberally watered and should be compacted to a minimum of 90 percent of maximum dry density as determined by ASTM Test Procedure No. 1557-70. We suggest that best compaction results might be obtained with a self-propelled vibratory steel-drum roller.

7. Fill slopes should be placed no steeper than 2:1, horizontal to vertical. The proposed sand fill has little cohesion and so will be highly susceptible to erosion. It is important that the fill slopes be planted and that the fill surface above the slopes be so graded that rainfall runoff does not channel over the slopes. Iceplant

and related members of the succulent family grow well in this sandy soil.

Foundations

One of the most critical aspects of foundation design at this particular site is the location of any given structure in relation to the subsurface features. If it is found to be feasible to attain a relatively uniform depth of fill beneath any given structure, foundation design should prove to be relatively straightforward. If the fill depth ranges widely beneath any given structure, special consideration may be necessary.

The recommended foundations are normal continuous footings for wall loads and spread footings for isolated interior loads. Both continuous and spread footings may be designed for an allowable bearing pressure of 2000 psf. This value may be increased by 1/3 for temporary and seismic loading. The footing must be reinforced and have a minimum horizontal dimension of 12 inches. The depth of footing must be a minimum of 12 inches below the lowest adjacent grade. Adjacent footings should be placed at the same elevation. In no case should an imaginary line between parallel footings of separate structures be steeper than 45 degrees.

The above recommendations assume a properly regraded site in accordance with the criteria recommended under Site Preparation and Grading. They further assume that it will be feasible to attain a relatively uniform thickness of compacted fill beneath any individual structure. It is important that we be requested to review structure locations and foundation plans prior to construction that we may judge whether they are appropriate. If upon completion of site grading it is found to have been necessary to place the fill in varying thickness on any particular lot, and if the chert is near the surface, it may be necessary to design a foundation specifically for the conditions present on that particular lot.

Slabs-On-Grade

Slab-on-grade construction is a feasible alternative only if the site is reworked in accordance with our recommendations. The sand proposed as fill material, if properly compacted, and uniform in thickness, should provide excellent subgrade reaction to a concrete slab. However, slabs may be expected to develop cracks along the contact between sharply differing conditions such as deep fill adjacent to a steep subsurface wall of hard rock which is covered with little or no fill.

Should moisture protection be desired, it should be noted that the sand will permit ready access of ground water to the under side of the concrete slabs.

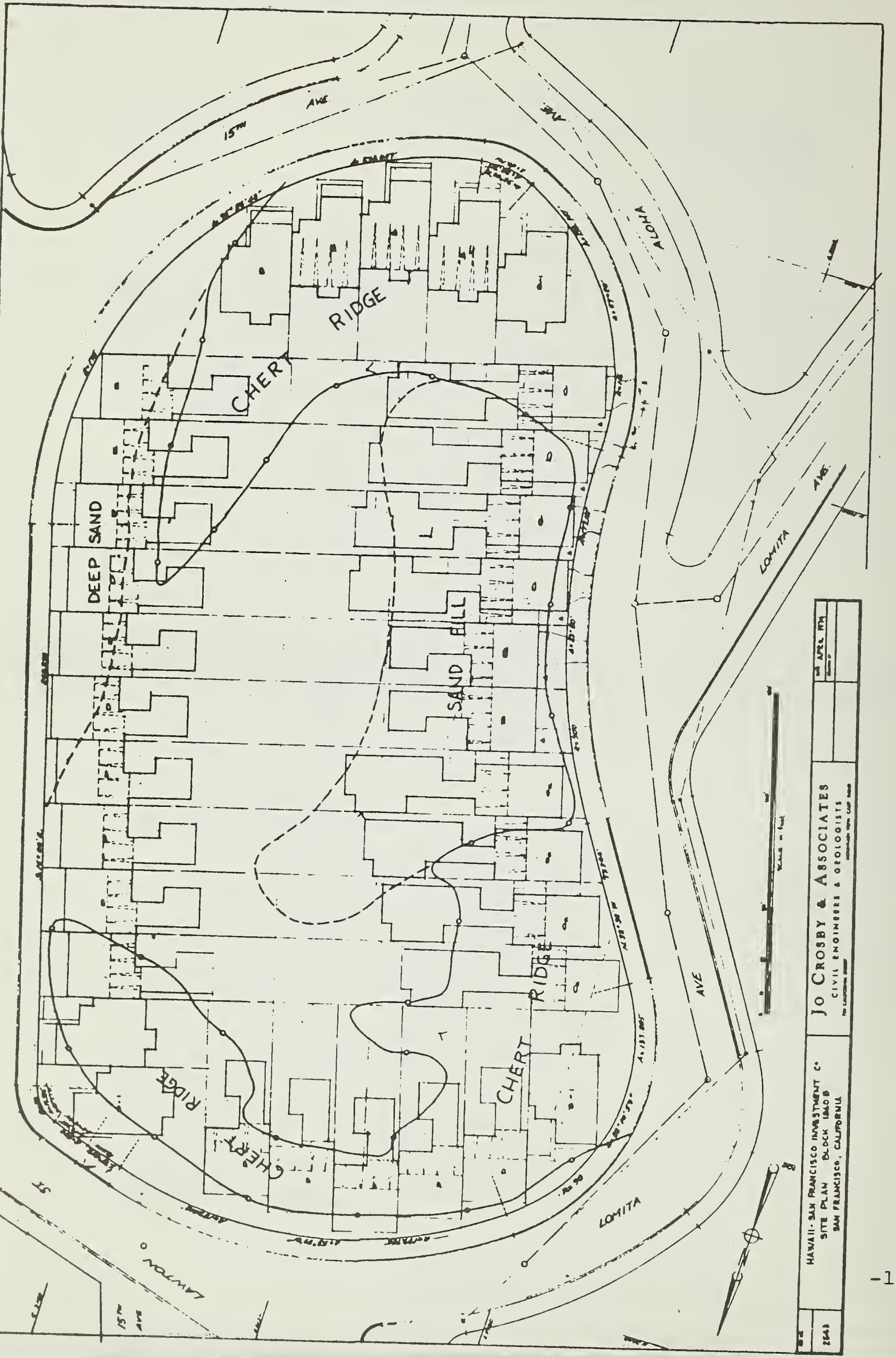
Inspections and Reviews

The plans for grading the site should be reviewed by our office prior to commencement of earthwork. All grading, footings, and backfill should be inspected by our field representative during construction.

Limitations and Uniformity of Conditions

The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the present time, JO CROSBY AND ASSOCIATES should be notified so supplemental recommendations may be given.

This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to call to the attention of the architect and the engineers for the project the information contained herein to effect their incorporation into the plans. The conclusions and recommendations contained herein are professional opinions derived in accordance with current standards of professional practice and no warranty is expressed or implied.


15TH AVE
AVE
ALOHA
CHERT RIDGE
CHERT
RIDGE
DEEP SAND
SAND FILL
CHERT RIDGE
CHERT RIDGE
LOMITA AVE
AVE
LOMITA
LAWTON ST
15TH AVE
JO CROSBY & ASSOCIATES
CIVIL ENGINEERS & GEOLOGISTS
HAWAII-SAN FRANCISCO INVESTMENT Co
SITE PLAN BLOCK 1860B
SAN FRANCISCO, CALIFORNIA

RECOMMENDED GENERAL GRADING SPECIFICATIONS

1.1 General Description

1.11 These specifications have been prepared for general grading and site development of this project. Jo Crosby & Associates, hereinafter described as the Soil Engineer, should be consulted at least 4 days prior to any work connected with site development. The Grading Contractor should be made aware of the existence of these specifications.

1.12 This item shall consist of all clearing and grubbing preparation of land to be filled, filling of the land, spreading, compaction, density testing of the fill, and all subsidiary work necessary to complete the grading of the filled areas to conform with the lines, grades and slopes as shown on the accepted plans.

1.13 In the event that any unusual conditions, not covered by these specifications, are encountered during grading operations, the Soil Engineer shall be immediately notified.

2.1 Clearing, Grubbing and Preparing Areas to be Filled

2.11 All timber, logs, trees, brush, abandoned buildings, debris and other rubbish shall be removed, piled or burned or otherwise disposed of so as to leave the areas that have been disturbed with a neat and finished appearance free from unsightly debris. No burning shall be permitted in the area to be filled.

2.12 All loose soil and vegetable matter shall be removed from the surface upon which the fill is to be placed, and the surface shall then be plowed or scarified to the recommended depth, and until the surface is free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction by the equipment to be used.

2.13 The original ground upon which the fill is to be placed shall be plowed or scarified to the recommended depth.

2.14 After the area to receive the fill has been cleared, plowed or scarified, it shall be disced or bladed until it is uniform and free from large clods brought to the proper moisture content by adding water or aerating and compacted to not less than 90% of maximum dry density as determined by ASTM Test Procedure No. D 1557-70.

2.15 Loose soil removed in accordance with paragraph 2.12, if free of vegetable matter and other deleterious material, may be incorporated in compacted fill.

3.1 Materials

3.11 The materials for the engineered fill shall be approved by the soil engineer at least four days before commencement of grading operations. Any imported material must be approved before being brought to the site. The materials used shall be free of vegetable matter and other deleterious substances. No rocks larger than six inches in dimension will be permitted in mass fills unless they are placed at the direction of the soil engineer.

3.12 Native soil, free of organic or other deleterious material, may be used as fill.

3.13 The contractor shall notify the soil engineer at least four working days in advance of his intention to import soil from any source outside the project areas and shall permit the soil engineer to sample as necessary for the purpose of making tests to establish the qualities of these materials. The contractor shall be responsible for all costs incurred in sampling, testing, analyzing, and otherwise determining the applicability of the materials for use on the site. The work shall be performed by the soil engineer.

4.1 Placing, Spreading and Compacting Fill Material

4.11 The selected fill material shall be placed in layers which, when compacted, shall not exceed 6 inches in thickness. Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to provide uniformity of material in each layer.

4.12 When fill material includes rock, no rocks larger than 2 feet in their largest dimension will be allowed to nest and all voids must be carefully filled with small stones or earth and properly compacted. No such rocks will be permitted closer than 5 feet below the finished grade.

4.13 When the moisture content of the fill material is below that sufficient to obtain the required density, water shall be added. When the moisture content of the fill material is above that sufficient to obtain the required density, the fill material shall be aerated by blading or other satisfactory methods.

4.14 After each layer has been placed, mixed and spread evenly it shall be thoroughly compacted to not less than 90% of maximum dry density as determined by ASTM Test Procedure No. 1557-70.

4.15 Compaction of each layer shall be continuous over its entire area and continued until the required density is obtained.

5.1 Tests

5.11 The standard test used to define maximum densities of all compaction work shall be the ASTM Test Procedure No. D 1557-70. All densities shall be expressed as a percentage of the maximum dry density obtained in the laboratory by the foregoing standard procedure.

5.12 Field density tests shall be made by the Soil Engineer. The number of tests will be determined by the Soil Engineer or applicable specifications.

JO CROSBY & ASSOCIATES
CIVIL ENGINEERS - GEOLOGISTS
756 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94040

P. O. BOX 4220
TELEPHONE (415) 969-3268

RECEIVED
HAWAII & SAN FRANCISCO
INVESTMENT COMPANY

APR 24 1974

File 2543-40
April 22, 1974

Hawaii and San Francisco Investment Company
107 Jackson Street
Hayward, California

Attention: Mr. William Ghidossi

Gentlemen:

Subject: Pier Design Criteria
Blocks 1928-A and 1928-B
Golden Gate Heights
San Francisco, California

This letter is in response to our recent discussions with Mr. Ken Smetts, structural engineer, regarding pier design. Pier design is particularly complex at the subject site, and special consideration should be given. This letter is to provide specific design criteria to supplement the general requirements presented in our original report to Homestead Savings & Loan Association, dated January 4, 1972. The design criteria in this letter differ in some instances from those in the original report and should be considered to supersede those in the original report.

In general there are three subsurface strata to be considered in the design of the piers; a relatively loose clean sand underlain by a relatively stable silty or clayey sand underlain by Franciscan chert or greenstone, hereafter referred to simply as rock. All piers should be founded in either the rock or the stable silty/clayey sand. The upper loose sand should be assumed to creep downslope exerting an active soil pressure on the piers.

For vertical loads, as previously submitted in our report, dated January 4, 1972, the piers may be designed using an allowable end-bearing value of 4500 psf. This value may be increased by 250 psf for each additional foot of penetration into rock or into silty/clayey sand up to a maximum allowable bearing pressure of 8000 psf. The recommended design bearing value may be increased by one-fourth for seismic or other temporary loads.

In addition to vertical loading, the piers should be designed to withstand considerable lateral loading due to (a) wind and seismic forces and due to (b) active soil pressure exerted by the downslope creep of the upper loose sand. It is suggested that the piers be designed by analyzing the lateral forces of (a) and of (b) separately, since the upper stratum of relatively loose sand may be assumed to resist wind and seismic loads but not the active soil pressure due to its own downslope creep.

For lateral loads, the piers may be designed using an active earth pressure of 50 psf/ft for the downslope creep of the loose sand, a resistive passive earth pressure of 350 psf/ft up to a maximum of 5000 psf for the underlying stable sand, and a resistive pressure in the rock of 500 psf/ft up to a maximum of 5000 psf. These pressures as well as the recommended hinge points about which to compute moments are shown diagramatically in the attached Figures 1 and 2.

The depths of the three critical subsurface strata range widely across the site. In order to provide criteria for pier design, an idealized tabulation of subsurface conditions is submitted in attached Table I as the best estimate that can be made at this time. It should be expected that the actual drilled depths may be found to vary from these idealized conditions. A schedule of a range of designs for steel reinforcement cages should be compiled in order that the reinforcing steel might be quickly revised in the field if required for certain pier holes as drilling and pouring operations proceed.

In addition to the specific design criteria above, the following general conditions should be considered:

1. It would be advisable to take out as much of the lateral load as feasible in the top row of piers. These will be the easiest to drill and to case, and the rock will be closest to the surface.

2. The lower four rows of piers should be designed as small in diameter as feasible, since a small diameter hole will be easier to drill on a slope, will be less liable to caving, and, when poured, will pick up less active earth pressure from the sand creeping downslope.

3. The sand will be prone to caving, so pier holes should be poured as soon as practicable after drilling.

4. Pier holes will probably require casing.

5. We understand that it is proposed to excavate a considerable portion of the loose sand prior to drilling piers. Whatever depth of sand is excavated may be subtracted from the figures submitted in Table I.

Very truly yours,

JO CROSBY & ASSOCIATES

Jim Mc Nely

Jim McNely

J K Crosby

Jo K. Crosby
C.E. 13063

xc: Mr. K. D. Smetts
Morgan D. Howell, AIA

JM:sj

PIER DESIGN FOR LATERAL LOADS

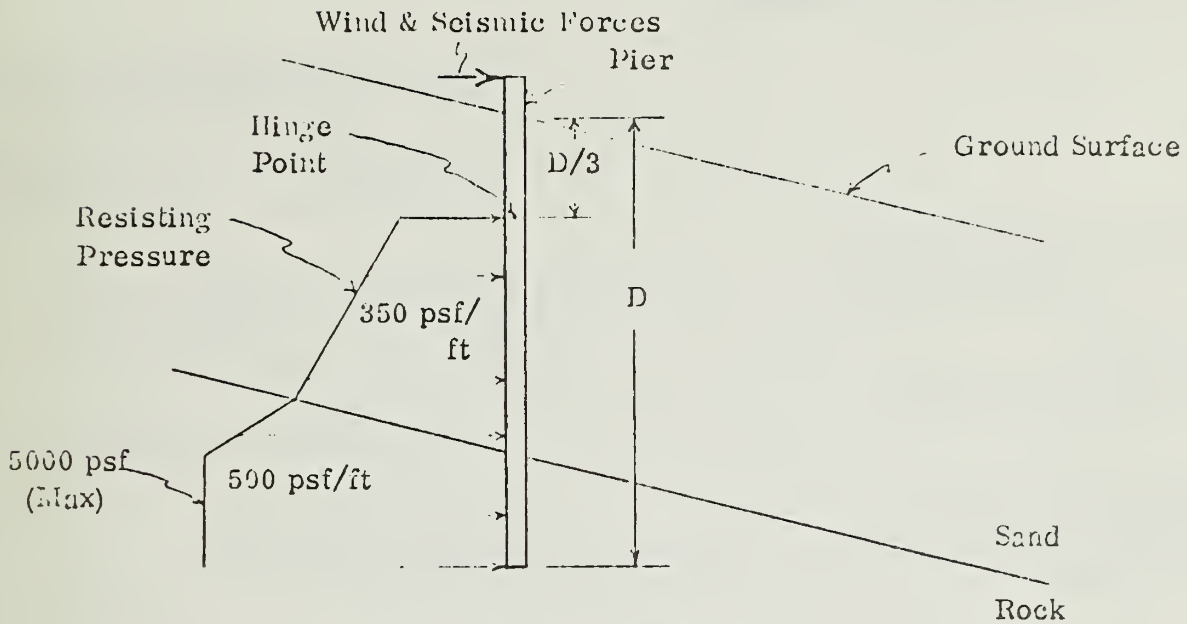


FIGURE 1 -- Wind and Seismic Lateral Loading

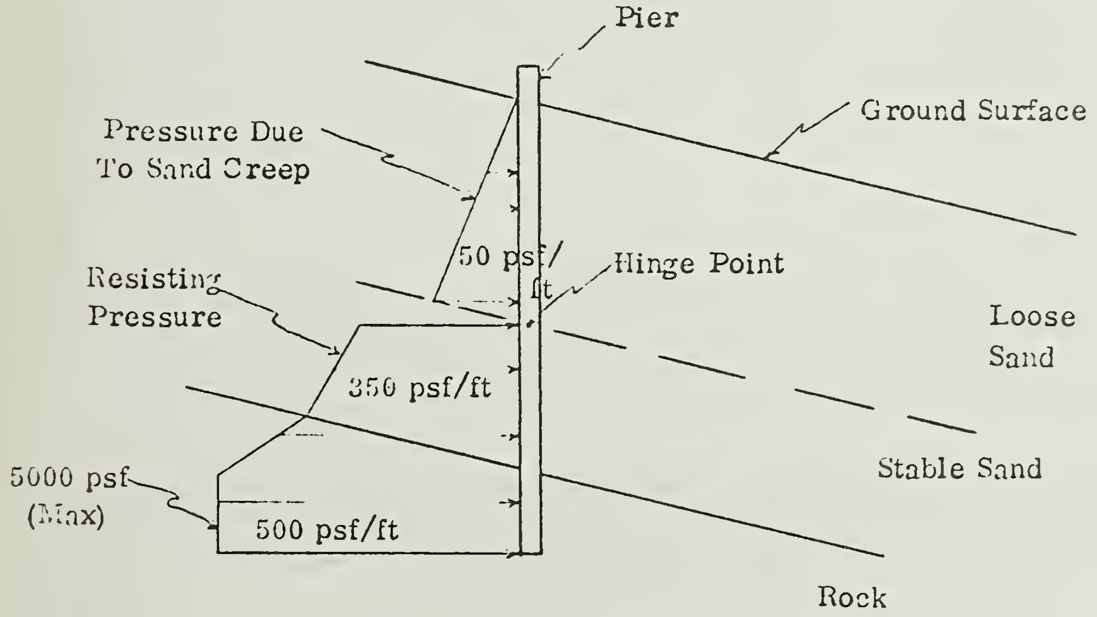


FIGURE 2 -- Lateral Loading Due To Downward Creep of Loose Sand

File No. 2543
Hawaii & San Francisco Investment Co.
Golden Gate Heights
4-22-74

TABLE I -- SUBSURFACE CONDITIONS

	Depth Below Existing Ground Surface (Ft)	
	Most Probable Range	Best Estimate For Design
Block 1928-A, Lots 4 through 13; Block 1928-B, Lots 1 through 3:		
Top Row of Piers		
Bottom of Loose Sand	8 - 12	10
Top of Rock	10 - 40	Over 30
Lower Four Rows of Piers		
Bottom of Loose Sand	10 - 12	10
Top of Rock	30 - 50	40
Block 1928-B, Lots 4 through 9:		
Top Row of Piers		
Bottom of Loose Sand	8 - 12	10
Top of Rock	10 - 15	12
Bottom Four Rows of Piers		
Bottom of Loose Sand	10 - 16	15
Top of Rock	17 - 40	30
Block 1928-B, Lots 10 through 16:		
All Piers		
Bottom of Loose Sand	12 - 20	20
Top of Rock	20 - 60	Over 40

NOTE: Assume stable silty/clayey sand between bottom of loose sand and top of rock.

JO CROSBY & ASSOCIATES
CIVIL ENGINEERS · GEOLOGISTS
750 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94040

P. O. BOX 4220
TELEPHONE (415) 969-3268

File 2543, X-Ref 2167
August 2, 1974

AUG 9 1974

Western Subdivision Engineering Company
182 Second Street
San Francisco, California 94105

Attention: Mr. Walter D. Foy

Subject: Grading Plan Review
Block 1928B, Golden Gate Heights

Gentlemen:

As requested in your letter dated July 15, 1974, with grading plans for Blocks 1928B and 1860B, Golden Gate Heights, San Francisco, we have reviewed the grading plans for Block 1928B.

The grading plan for Block 1860B was not reviewed subsequent to a phone conversation by this office and Mr. Morgan Howell because of pending changes due to foundation requirements contained in our soils report dated April 5, 1974, for Block 1860B, our file 2543. One copy of the soils report for Block 1860B was subsequently sent to you, Mr. Smett and Mr. Morgan Howell. We shall be pleased to review the grading plan for Block 1860B with revisions, if any, whenever they are forwarded to this office.

This review was based on a plan titled "Grading Plan, Block 1928B Golden Gate Heights, San Francisco, California, prepared for Hawaii and San Francisco Development Company," dated July 12, 1974, prepared by Western Subdivision Engineering Company. The soil data developed in our investigations performed between the period of 1971 - 1972 and subsequent various correspondence were utilized in this review.

It is our opinion that the subject grading plan is in substantial conformance to our soil investigation reports for Tract 1928B with the exception of the following items:

1. The on-site dune sand is highly susceptible to erosion. To aid in resisting erosion due to rainfall runoff, a drainage terrace at least six feet wide should be installed at midslope for every portion of the slope with vertical distance of greater than 30 feet between the proposed retaining wall at the bottom of the slope and the backs of the upper row of houses. The terrace should be sloped inward and graded to drain to an adequate outlet. A channel should be cut in the terrace and lined with concrete or similar material to protect the sand against erosion. This protective covering should extend beyond the edges of the proposed channel a sufficient distance to prevent its being undermined by overflow.

2. The drainage terraces proposed above may be designed into the slopes in such a way that the overall slope is no steeper than 2:1, horizontal to vertical. For example, a slope 50 feet high may be designed with a horizontal distance of 94 feet under the slope plus 6 feet horizontal for the terrace.

3. To restrict the amount of water flowing over the slope to that rainfall falling directly on the slope itself, the upper row of lots should be graded to drain to the street. Downspout water from the roofs should not be allowed to flow over the slope.

4. A channel similar to that cut in the drainage terrace should be installed behind the proposed retaining wall at the bottom of the slope to prevent water from flowing off the slope into back yards of the homes below.

5. Following construction, for the first year or two particularly, there will be a tendancy for loose sand to wash into the channels proposed above. Some provision should be made to clean them out as required to assure continued proper functioning.

The critical items associated with the slopes on this project are erosion control and long-term slope stability. It is important that the slopes be protected by drainage channels as recommended above and by adequate planting of the slopes. In addition, proper keying and compaction will be essential for any fill placed on existing slopes during construction.

After the grading plan is prepared as recommended above, we would appreciate the opportunity to review the foundation plans for the project. Please contact this office should you have any questions.

Very truly yours,

JO CROSBY & ASSOCIATES

Jim Mc Nely

Jim McNely

Jo K. Crosby
C.E. 13063
E.G. 357

xc: Hawaii-San Francisco Investment Company
Morgan Howell, AIA

JO CROSBY & ASSOCIATES
CIVIL ENGINEERS · GEOLOGISTS

750 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94040

P. O. BOX 4220
TELEPHONE (415) 969-3268

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[illegible] SAN FRANCISCO
[illegible] COMPANY

AUG 14 1974

File No. 2543-17
August 12, 1974

Morgan D. Howell, A.I.A.
1625 B Street
Hayward, California 94541

Subject: Drainage Terrace Width Revision
Block 1928-B, Golden Gate Heights
San Francisco, California

Dear Morgan:

This letter is to confirm our telephone conversation of August 9, 1974.

Regarding our letter dated August 2, 1974, in which we recommended that a 6-foot drainage terrace be cut midway down the proposed slope of the subject site, it is satisfactory to us if this drainage terrace be cut a minimum of 2.5 feet instead of 6 feet. With this reduction in width, it is even more important that the terrace be cut into well-compacted soil and that it be protected from erosion by surfacing such as concrete and by adequate planting.

A disadvantage to be aware of is that the reduced width may require more frequent cleaning and maintenance and that all such work will have to be performed by hand labor.

Very truly yours,

JO CROSBY & ASSOCIATES

Jim McNely

Jim McNely

Jo K. Crosby
C.E. 13063, E.G. 357

JM:sj

JO CROSBY & ASSOCIATES
CIVIL ENGINEERS · GEOLOGISTS

750 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94040

P. O. BOX 4220
TELEPHONE (415) 969-3208

RECEIVED
SAN FRANCISCO
OCT 21 1974

File 2543-32
October 17, 1974

Hawaii and San Francisco Investment Co.
107 Jackson Street
Hayward, California

Attention: Mr. William Ghidossi

Subject: Friction Pier Design Criteria
Block 1928-B, Golden Gate Heights
San Francisco, California

Gentlemen:

This letter is to confirm our telephone discussions with Mr. Ken Smetts, Structural Engineer, and Mr. Tony Battaglia with Morgan Howell, A.I.A., on October 15 and 17, 1974. -

The recommended pier design criteria have been revised several times during the course of the project. The criteria finally agreed upon and reflected in the plans are as follows:

1. Piers are to be designed to carry vertical loads by friction between the on-site sand and the piers. The criteria for design were submitted by us in the form of telephone discussions and handwritten notes to Messrs. Smetts and Howell on May 20, 1974, and are as follows:

   (a) For a pier penetration, L, below ground surface, assume that the upper 20 percent, or 0.20 L, may support no load.

   (b) Below 0.20 L, a length of pier equal to 10 pier diameters, or 10D, may be assumed to increase in friction from zero to 660 psf. For example, an 18-inch pier may be assumed to increase in friction from zero to 660 psf over a length of 15 feet, or an average of 330 psf over the 15 feet.

   (c) The length of pier below the depth of 0.20 L + 10D may be designed for a friction value of 660 psf.

2. In addition to being designed to support the proposed vertical loads, the piers should be designed to resist lateral loading as discussed in our letter Pier Design Criteria dated April 22, 1974. In accordance with the criteria submitted in that letter, each pier should have a minimum penetration of 3 feet into the underlying stable silty/clayey sand for every 10 feet of overlying dune sand. The purpose of this measure is to resist the anticipated downhill creep of the dune sand.

3. In addition to the above-mentioned soils criteria, each pier should be designed structurally capable of withstanding the bending moment imposed upon it by the lateral forces.

We understand from our discussions with Mr. Smetts that all of the above items have been taken into consideration in the design.

Very truly yours,

JO CROSBY & ASSOCIATES

Jim McNely

Jim McNely

Jo K. Crosby
C.E. 13063
E.G. 357

JM:mto

cc: Morgan Howell, A.I.A.
Mr. Ken Smetts

John E. Bryan
238 Evergreen
Kentfield
California.
May 7th 1975

Spectrum N.W.
440 F Fulton
San Francisco Ca 94102.

Attention Mr Wallace Stokes.

Dear Mr Stokes.

I have today looked at the property at 15th and Noriaga.

At the moment there are several trees of value to the area growing on this site. These include; Acacia, Monterey Cypress, Eucalyptus and others. There are also present other plants such as Mesembryanthemum and grasses.

Several of the trees are in poor condition and need to be looked after, this work would include removal of dead branches and the lightening of certain limbs. At least one of the trees is dead. This should be removed.

Any construction has an adverse effect on trees. This can be kept to a minimum if special care is given. There should be no removal of soil or trenches dug within 30 feet of the larger trees and within 20 feet of the smaller. If soil is added a well should be constructed to protect the base of the trees.

If any construction would prevent rain reaching the soil it would be advisable to allow for supplemental irragation to offset the loss. At all time care should be taken to avoid compaction of the soil around the trees. Trucks and other heavy equipment can cause as much damage as the damage to roots caused by excavation.

In view of the beauty of the trees on the site and the fine stature of the trees every effort should be made to preserve them.

John E. Bryan.
Consultant-Arborist.

April 14, 1975

Mr. Gilbert H. Boreman
Acting Clerk of the Board
Board of Supervisors
Room 235, City Hall
San Francisco, CA 94102

Re: File No. 93-75-2
Golden Gate Heights

Dear Mr. Boreman:

With reference to your letter of March 19, 1975, concerning planning issues in the Grandview Park area of Golden Gate Heights, we wish to report as follows:

(1) Acquisition of the property with Proposition J funds.

We have estimated that the purchase price of the land on which the developer proposes to build 83 homes would be between $1,500,000 and $2,000,000.

Phased purchase of all or part of the property might be possible under Proposition J. If such a course were to be taken, it would be necessary to obtain options for purchase of the property that would extend over a span of possibly many years.

Acquisition of this property was not specified in the Recreation and Open Space Element of the Comprehensive Plan. Two open areas nearby are in that plan, however, and the combined cost of these two areas, based upon their assessed values, is approximately $455,000. In addition, the developer has agreed to reserve for a period of three years a wooded area approximately one acre in size at the intersection of Noriega Street and 15th Avenue. This is not a gift, and the City or interested persons would be required to purchase the reserved property at a cost of approximately $175,000.

The suggestion for purchase of the entire proposed subdivision, therefore, must be weighed against purchase both of these recommended areas in Golden Gate Heights and of open areas throughout the city. Proposition J requires that substantial funds be used for acquisitions in high-need neighborhoods, where visible existing open space is not available and improved properties will have to be purchased for recreation at high cost.

The staff of the Department of City Planning does not believe that purchase of additional open space in this part of the city is appropriate in light of citywide needs and would not be inclined to recommend that the Recreation and Open Space Element be amended to permit acquisition of the property with Proposition J funds.

(2) Rezoning from R-1 to R-1-D.

The question dealing with acquiring the property from the developer so that it might be rezoned is unclear. If the land were to be acquired by the City for open space, the appropriate zoning would be P (Public) and not R-1-D.

A change in zoning while the property is still in private ownership is possible. As was noted at the Planning, Housing and Development Committee hearing on March 18, 1975, when this question was introduced to the Committee by Supervisor Feinstein, existing residences in the subject neighborhood have attributes of both R-1 and R-1-D zoning districts. Although their lots are somewhat smaller than the typical lot in R-1-D districts, many of the older dwellings have side yards, the most apparent characteristic of an R-1-D district. Reclassification of this area to R-1-D, the only district having a side yard requirement, would insure that this side yard pattern would be continued in any new development, with the positive effects that such side yards have, including providing views from adjacent streets and reducing wet weather runoff.

If R-1-D zoning were to be considered for the land now contemplated for development for 83 dwelling units, consideration of adjacent vacant and developed land for such a classification might also be appropriate. This Department would schedule the required public hearing of the City Planning Commission for consideration of a proposal to reclassify this area from R-1 to R-1-D if the Board of Supervisors or interested citizens initiated such a rezoning.

(3) Width of roadways abutting the property.

The Fire Department has submitted the following street width standards:

(a) For curb parking on both sides, the paved portion of the right-of-way should be at least 28 feet wide.

(b) For curb parking on one side only, the paved portion of the right-of-way should be at least 21 feet wide.

Both 14th Avenue and 15th Avenue are paved to a width of 18 feet at their narrowest point at this time. These streets, however, already have curbs and are accepted and maintained by the City. The Fire Department may recommend disapproval of new building permit applications for sites fronting on streets that do not meet the standards, and this matter is being reviewed with that Department currently.

Very truly yours,

Edward I. Murphy
for
Dean L. Macris
Director of Planning

cc: Supervisor Feinstein
Recreation and Park Department

EIM:PSS:blb

RICHMOND-SUNSET
WATER POLLUTION CONTROL PLANT
INTERIM IMPROVEMENT PROGRAM

San Francisco's Wastewater Management Master Plan calls for the eventual abandonment of the Richmond-Sunset treatment Plant located in Golden Gate Park, and the construction of a new facility near Lake Merced to treat the wastes collected in the City's Richmond, and Sunset districts. The Master Plan has received conceptual approval of; the Regional Water Quality Control Board, the Environmental Protection Agency, the Board of Supervisors, and The Department of City Planning.

The City was recently issued a National Pollution Discharge Elimination System permit for each of its three treatment plants. This permit required improvements be made to the Richmond-Sunset Treatment plant in the interim untill the facility identified by the Master Plan could be constructed and put into operation.

These required improvements include; more effective removal of BOD, solids, and grease* and a de-chlorination process resulting in zero residual chlorine in discharged effluent from the plant.

The Department of Public Works is currently evaluating alternative methods of meeting these interim requirements. These alternatives include but are not limited to; increasing the plants hydraulic capacity (thereby slowing the flow through the plant down and extending treatment times), use of strainers (to improve solids removal), and use of high doses of chemical flocculation agents.

---

* The sewage constituents referred to above are often measured to judge the effectiveness of treatment plants. BOD (biochemical oxygen demand) is the quanity of oxygen used in the biological process that degrade organic material under specified conditions. Solids can be divided into two catagories; suspended, which do not tend to settle out, and settleable which sink to the bottom under the influence of gravity.

PUBLIC UTILITIES COMMISSION
CITY AND COUNTY OF SAN FRANCISCO
JOSEPH L. ALIOTO, MAYOR
287 CITY HALL
SAN FRANCISCO, CALIFORNIA 94102
558-4936

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VICE PRESIDENT
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JOHN D CROWLEY
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JOHN C. FARRELL
SECRETARY AND ASSISTANT GENERAL MANAGER
JOHN M. CHRISTENSEN, JR.
ASSISTANT GENERAL MANAGER FINANCE

FEB 5 1975

February 4, 1975

Selina Bendix, Ph.d.
Environmental Review Officer
Department of City Planning
100 Larkin Street
San Francisco, California 94102

Dear Dr. Bendix:

Comments on the Draft Environmental Impact Report for the Golden Gate Heights Residential Development (EE 74.72) are enclosed. Thank you for the opportunity to comment.

Sincerely,

James J. Finn

James J. Finn
Director of Transportation

enc.

sg

MUNICIPAL RAILWAY HETCH HETCHY PROJECT WATER DEPARTMENT

FEB [illegible]

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT REPORT FOR GOLDEN GATE HEIGHTS RESIDENTIAL DEVELOPMENT (EE 74.72)

Re: II Description of Environmental Setting

Transportation
Vehicular, pages 27 and 28

The report does not mention that many of the streets in Golden Gate Heights are so narrow that two-way traffic is difficult to accommodate. Fourteenth Avenue, although presently a through street, was until recently a cul-de-sac, terminating at Quintara Street.

Transportation
Mass Transit, pages 28 and 30

The report states that the 28 Line provides cross-town transportation. However, because of the steep grade from the sites to 19th Avenue and because the 66 Line crosses the 10 Line, residents of this area might choose to use the 10 Line, especially for home-coming trips when they would have to ascend a steep hill from the 28 Line route to reach this area.

Re: III Environmental Impacts Likely To Occur If The Proposed Project Is Undertaken

Transportation
Vehicular, page 43

The modal split used to predict automobile-transit usage may have been misapplied. 50% may be a realistic assumption for CBO oriented travel during weekday peak periods, but not for all travel. Thus, the number of daily trips by automobiles projected should be higher than the 249 to 332 predicted.

The report states that officials of the Municipal Railway felt that the projected increase of passengers on transit lines serving the proposed development could be easily accommodated, with the exception of the 28 Line. Ride checks were conducted by Municipal Railway's Traffic and Schedules Department for the 66 Line, the primary transit route for the site, during January, 1975. The checks indicated that evening peak hour ridership on the 66 Line was close to the maximum desirable load for evening peak hour service, and actually in excess of this maximum for the peak 15 minutes of the peak hour.*

Also, ride checks were conducted on the 10 Line during October, 1974. The 10 Line, as stated above, is perhaps the most readily accessible cross-town line from the site area. The checks indicated that passenger loads on this line were close to the maximum desirable for the morning peak hour and in excess of this maximum for the peak 15 minutes in this period.**

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* A ratio of 1.5 passengers to seats is considered acceptable for motor coaches during peak hour (i.e. "rush hour") service. This ratio on the 66 Line was 1.4 for the peak evening hour and 1.7 for the peak 15 minutes.

Thus, relatively minor increases in transit demand generated by the proposed development would be manifested on transit lines which are already crowded.

** The passenger/seats ratio on this line was 1.33 for the peak a.m. hour and 1.7 for the peak 15 minutes.

The following persons testified at a public hearing held before The Planning Commission of the City and County of San Francisco on February, 20 1975

Mr. Rene Gautier, Chief, San Francisco Fire Department

Ms. Mary Burns, representing Senator George Moscone's office

Mr. Tim Eichenberg, Staff-person, SPEAK

Dr. Stella Tennenbaum

Mr. Rolland Louden

Mr. Prelhiem

Mrs. Halpern

Mrs. Gladys Elkus

Mrs. Kay

Mrs. Deitriech

Ms. Diana Schindler

Mr. David Gabriel

Ms. Zeta Parks

Mr. Leon Salanave

Ms. Margaret Shamlian

Comments by Members of the Public to the Draft EIR and Responses by the Authors to the Comments.

Below are paraphrased comments presented at a public hearing on February 20, 1975.

Mr. Rene' Gautier, Chief, San Francisco Fire Department

(1) Comment: The widths of 14th and 15th Avenues are not sufficient for adequate fire vehicle access while allowing on-street parking. (He outlined the required widths.) It is unrealistic to think that a prohibition of on-street parking would work since visitors and delivery vehicles would inevitably park there.

Response: This information was incorporated into the text, page 43.

Ms. Mary Burns, Senator George Moscone's office

(2) Comment: Mr. Moscone is concerned that Golden Gate Heights residents have an adequate time to review the report.

Response: The Commission acted to postpone the matter indefinitely to allow the report to be rewritten so as to incorporate the new information obtained at this hearing. They ruled that a 30-day notice would be given of the new hearing after the revised report was made available.

Mr. Tim Eichenberg, Staff-person, Sunset-Parkside Education and Action Committee

(3) Comment: The Report is incomplete and inadequate in the following respects:

1. Maps depicting lot numbers and house types are unreadable and make relating house size to exact location within the development impossible. This prohibits any meaningful input from the public until new maps are drawn and examined.

Response: This revision should contain more legible figures. The public has been made aware through the notice of the public hearing that full-sized drawings and site plans are on display at the Department of City Planning during the review period.

(4) Comment: 2. Soil examinations were only performed on blocks 1928A and 1860B. Although a Pier Design Criteria for block 1928A was written, the EIR contains no soil examination report providing the basis for these criteria and nothing what-so-ever was developed for block 1929A. Such reports must be prepared before the EIR can be considered complete since the depths of the subsurface strata differ dramatically throughout the site.

Response: Soil reports have been conducted for the entire site and these have been placed in the appendices of this report.

(5) Comment: 3. The EIR contains inadequate safeguards against seismic activity. It refers to a "Blume Report" not contained in the EIR as substantiation that only weak ground shaking on the site will occur. Yet the report is also quoted as asserting the site has potential landslide hazards and another consultant report states that lots 14-32 in block 1928B may be subject to large scale failures within wet sands underlain by shale and are "particularly sensitive to seismic loadings." (p. 35) This contradiction should be resolved, adequate mitigative measures should be provided, and all reports should be included in the EIR.

Response: There is no contradiction between the fact that only weak ground shaking is predicted for the site and the fact that the site has potential landslide hazards and is particularly sensitive to seismic loadings. This site is prone to landsliding due to the nature of the soil and topography, not due to the potential for ground shaking. The mitigation section has incorporated a statement to cover seismic hazards. All soil reports have been included as appendices.

(6) Comment: 4. The EIR announces that only minor alterations of landforms will occur on p. 52 yet on p. 36 it talks of excavation, leveling, filling and recompacting and "substantial excavation" in building retaining walls.

Response: The word "minor" has been deleted from this report.

(7) Comment: 5. The report inaccurately states that the site does not function as active open space when many residents and children use the area daily (p. 39). An examination and documentation should be made of the active use of the area as recreational open space.

Response: A footnote has been added defining "active open space" as it is used in this report.

(8) Comment: 6. Drainage, run off and liquid waste disposal considerations are inadequately covered in the report. The effect of increased run off on the Richmond-Sunset Waste Water Treatment facility is not analyzed with regard to raw sewage that is already violating Federal Water Control Act every time is rains. The site in its undeveloped condition causes no raw sewage to enter the Ocean. However, if construction proceeds, the report states 4.6 million gallons annually will enter the already overflowing treatment facility. No figures substantiating this are presented nor are any mitigative measures proposed despite its violation of federal water quality standards. Furthermore the effect of this on the coastal environment has not been reported!

Response: The report now includes information concerning the capacity of the Richmond-Sunset Plant and the amount of sewage expected from this development. Relating these two figures gives one the impact the development would have. Sewage generation of residential developments presented in gallons is nearly equivalent to the amount of water consumption as estimated by the Department of Public Works (see page 41). The report (page 141) presents the measures proposed to mitigate the impact of sewage generation in this area. A detailed analysis of the effect of wastewater on the coastal environment is not appropriate in each land development EIR. The effects can be extrapolated from a comparison of the capacity and generation figures presented above. Discussions of wastewater effects can be found in the Wastewater Management Plan EIR/S.

(9) Comment: 7. The report understates the effect the development will have on parking, traffic and congestion in the area by erroneously estimating that 50% of the trips made by occupants will be by public transportation even though each house will have a two-car garage. Daily trips will therefore be far more than the 249-332 estimated on p. 43 and the already narrow streets in the area will become severely congested with the influx of 440 more people.

Response: The issue of the number of garage spaces and traffic generation is discussed on page 47. The severity of congestion caused by the proposed development is essentially a subjective conclusion which each reader may make from the data presented in this report.

10) Comment: 8. The report also erroneously states that fire protection will be adequate (p. 41) since the narrow streets (17' 8")

will block fire fighting equipment if cars are parked along the street. Contrary to the statement on page 48 that sections of 14th and 15th Avenues are not used for parking, cars do park on these streets. If they continue to do so despite the prohibition of on-street parking, engines will not be able to pass by in case of fire. Furthermore, the EIR fails to deal with the inaccessibility of water supplies for fighting fires.

Response: The ability of certain streets to provide fire vehicle access is discussed on page 43. The report states that Fire Department officials consider water availability to be adequate.

(11) Comment: 9. The EIR announces that the development would destroy an endangered plant species located on the site yet it offers no mitigative measures. The report also inadequately describes how construction within the wooded area will preserve the trees since "considerable excavation" (p. 36) will occur in laying foundations and recompacting soil. A full report on construction procedures should therefore be included in the report.

Response: The report states that no mitigation of the development's impact on the Dune Tansey is available.

(12) Comment: 10., first paragraph. Project alternatives are inadequately covered. (p. 51) Obviously the null alternative "is not consistent with the developers financial goals," but how does this relate to environmental impact and what are his specific financial goals?

Response: The Alternatives Section has been revised. (See page 54.)

(13) Comment: 10., second paragraph. The area's potential as open space is again inaccurately dismissed by the report which also states that Grandview Park is readily accessible, when over 100 steps must be climbed to reach it!

Response: The statement concerning accessibility has been omitted from this report.

(14) Comment: 10., third paragraph. Furthermore, although use as open space would remove the site from city tax roles, no study in the report was made describing the precise income which the city would derive in revenue from the project. It is possible that the city may lose money in providing services to the site. Thus the statement that the development represents the highest and best economic use of the land may be totally false and obviously requires substantiation.

Response: The cost-benefit analyses of residential developments such as this one are not known. The statement in the Alternatives Section that the open space alternative would necessitate the property's removal from the tax rolls has been deleted from this report.

(15) Comment: 10., fourth paragraph. Finally no provision for useable open space within the development is made. Plans indicating how a less intensive development could reduce density, congestion, mitigate the loss of open space and recreational areas and preserve views from public places (e.g. 15th Avenue) should be more fully presented in the EIR. In this way the community could be compensated for its loss of open space resulting from the development.

Response: "In development" open space is now discussed in the open space alternative. The "less intensive" alternative is more fully discussed.

(15) Comment: 11. Our final comments concern the report's erroneous conclusion that the development conforms to the Urban Design Plan and the City's Comprehensive Plan. In fact the project is in violation of many Urban Design Plan policies. Specifically:

Conservation Policy 1 (p. 66): "Preserve in thier natural state the few remaining areas that have not been developed by man."

Neighborhood Environmental Policy 10 (p. 129): Encourage or require the provision of recreation space in private development."

City Pattern Policy 1 (p. 36): "Recognize and protect major views in the city, with particular attention to those of open space and water."

Major New Development Policy 8 (p. 96): "Discourage accumulation and development of large properties, unless such development is carefullly designed with respect to its impact upon the surrounding area and upon the city."

Land Conservation Policy 5 (p. 72): "Prohibit construction as a general rule on land subject to slide or erosion." Nearby homes demonstrate that the EIR measures are inadequate to prevent sliding and creep.

Flora and Fauna Policy 3 (p. 75): "Protect rare and endangered species." No effort is being made to do so in this development. The EIR confirs that.

It should also be noted that the Recreation and Open Space Element of the Comprehensive Plan calls for the acquisition of hilltop parks, not their destruction, and designates the Grandview Park extension because of its, "important natural and visual qualities" and its visual prominence. (p. 29) The plan states that, "Property for acquisition should go to those sites that are immediately threatened by development" such as this site (p. 31) and suggests eminent domain as a means of acquisition if direct purchase is not possible.

Finally the project is also in violation of several policies contained in the Conservation Element of the Comprehensive Plan which in Objective 1 states that, "those remaining resources should be protected from further encroachment." The Project violates the following policies:

Policy 3 (p. 55): "San Francisco should undertake projects to acquire or create open space." The city should therefore acquire this site as part of the Grandview Park extension.

Land Conservation Policy 2 (p. 72): "Protect land from changes that would make it unsafe or unsightly." Construction on this site do both.

Response: The policies listed above are all relevant to some degree to the proposed development. While not all of the above policies were chosen for inclusion into the main text, the issues upon which the above policies bear were confronted. See the discussion commencing on page 52 of the main text.

Dr. Stella Tennenbaum

(16) Comment: There is no way to transplant the Dune Tansey.

Response: The report acknowledges this. (See page 38)

(17) Comment: The added number of cars on the narrow streets would constitute a severe hazard.

Response: The position of the Fire Department on this issue has been noted (see page 43).

(18) Comment: The project as planned will not remedy the tendency of the buildings to slide as have other homes in the vicinity.

Response: The soil engineer for this project has presented recommendations (see appendix) which he feels is adequate for stable foundations. The Mitigation section (page 53) states that the development will be constructed in compliance with these recommendations.

Mr. Rolland Louden

(19) Comment: We should be told for sure whether or not blasting is required and if so, what safeguards to neighboring property would be incorporated.

Response: In a letter dated April 24, 1975 to the Department of City Planning, the developer has indicated that no blasting would be required. The Department of Public Works, which is responsible for issuing blasting permits, will not issue blasting permits except for tunneling operations. This is discussed on page 108 .

(20) Comment: There is no way to build the eight or nine homes shown among the trees without damaging or removing the trees.

Response: This issue is discussed in Appendix 139.

(21) Comment: The mitigation statement concerning the "tree bond" doesn't indicate who would get any forfeited money and it states this arrangement could be made - not that it would be made.

Response: The details of the "tree bond" have not been worked out because the developer has not decided to use this method of insuring trees. It is the function of the Environmental Impact Report to report impacts and present alternatives - not to impose conditions. Conditions must be imposed by other procedures.

(22) Comment: In the letter presented in the appendix, Dr. Breedlove said this development would not eliminate the Dune Tansey but would contribute to its demise.

Response: This report accurately presents the impact of the project on the Dune Tansey and reproduces Dr. Breedlove's letter in the appendices.

(23) Comment: The report states that the wastewater treatment system overflows during heavy rains some 80 times a year but it does not state the duration of the excess periods.

Response: The total excess period per year has been added to the text (see page 32).

Mr. Prelhiem

(24) Comment: What will be the impact of traffic on the narrow streets?

Response: See page 43 for the impact on fire vehicle access.

Mrs. Halpern

(25) Comment: Many cars parked on the narrow streets have been struck.

Response: The increased probability of accidents as a result of this proposal is acknowledged on page 48.

Mrs. Gladys Elkus

(26) Comments: Some of the copies didn't have the appendices.

Response: This printing incorporates the appendices in all copies.

Mrs. Kay

(27) Comment: Grandview Park is not very accessible.

Response: The sentence in the previous report which stated it was readily accessible has been deleted. Mrs. Kay's opinion has been incorporated into the section on neighborhood concerns.

(28) Comment: The statement on page 28: "Here, (at the base of the hills) through routes are frequent...". conflicts with the statement on page 46: "Through routes to downtown from the proposed project area are difficult and infrequent."

Response: There is no conflict. One statement refers to routes some distance from the project site while the other statement refers to routes directly from the site to downtown.

(29) Comment: On page 46 is a statement that unrestricted curb-side parking is available along the proposed development but that these parking spaces are seldom used. I know that cars are parked all over the streets.

Response: There are many cars parked on the street next to the developed areas of Golden Gate Heights but the spaces next to the site of the proposed development are very seldom used for parking. The report clearly identifies the location of the spaces referred to.

Mrs. Deitriech

(30) Comment: Many former animals are now gone.

Response: This seems reasonable. The observation could undoubtedly be made for many areas which have undergone development.

Ms. Diana Schindler

(31) Comment: The subject site has already seen soil erosion. The ivy which was to have checked erosion on adjacent development has not taken hold.

Response: This report now reflects soil erosion as a neighborhood concern. Appendix 64 discloses the measures proposed to stabilize the soil.

(32) Comment: The uncovered portions of the site will not absorb 100% of the water because it doesn't now.

Response: Appendix 129 discloses proposed methods of dealing with rain water runoff to channel it underground or in stabilized surface channels.

(33) Comment: The statement on page 51 that the subject site has no recreation value is untrue.

Response: The statement referred to has been deleted.

Mr. David Gabriel

(34) Comment: Noted that there are no Auxilliary Water Supply cisterns in the immediate area.

Response: This is true and the fact does not imply that the area would not have sufficient water supply for fire protection. Fire Department officials indicate the domestic water supply is adequate in this area.

Ms. Zeta Parks

(35) Comment: The natural area of the site is used as open space while Grandview Park is not easily accessible. They don't say how they are going to overcome the slide potential.

Response: These comments have been responded to above in this section.

(36) Comment: The report doesn't tell what would be done to keep the slope from sliding.

Response: This report now contains a letter from the soil engineer explaining the measures to be taken to assure surface soil stability. (See Appendix 64)

Mr. Leon Salanave

(37) Comment: There are no photographs to show view blockage, etc.

Response: This report now incorporates such photographs.

(38) Comment: Putting quotation marks around "rare" on page 22 casts doubt on the actual rarity of the plant.

Response: The quotation marks have been omitted in this text.

(39) Comment: The report should state that the site is under consideration for acquisition as open space because people want it acquired to protect the Dune Tansey.

Response: This desire of many present residents of Golden Gate Heights has been stated in the "Neighborhood Concerns" section, page 52 .

Ms. Margaret Shamlian

(40) Comment: The site is used as recreation by children.

Response: The report reflects that this statement has been made by present residents of the area, page 52 .

(41) Comment: Natural areas are important and Grandview Park is not used.

Response: The importance of natural areas are discussed in the "Objectives of the City" section. The observation of present residents concerning Grandview Park is reflected in the "Neighborhood Concerns" section.

(42) Comment: The trees cannot be saved if houses are built right next to them and the animals that live there now will disappear.

Response: See Appendix 134 for a discussion of building adjacent to trees. It is reasonable to expect that certain ground animals and some birds may disappear from the site as a result of the development. It is also reasonable to expect that certain birds may continue to inhabit the trees that remain on the site.

Letter from Ms. Sue Villard.

(43) Comment: The buildings could not be built on the dune sand. The dune would not be stable without the existing plants.

Response: These issues are responded to in items 53 and 36 above.

Rosemary Bacy, hand-delivered communication dated February 20, 1975.

(44) Comment: The proposed development is not in conformance with the Objectives of the City as outlined in the Urban Design Plan because this Plan stresses the importance of hills as important vista points to be protected. The proposed development would hem in the hilltops rather than protecting it and would block views of the park.

Response: The report deals with this issue in the "Objectives of the City" section and the Alternatives section.

(45) Comment: The design of the building proposed for block 1860B lacks design sensitivity. The proposal exhibits poor site planning on this block by proposing to level the former quarry without even considering views from the site. A Planned Unit Development with the same number of dwellings on that site could provide centralized parking and preserve some visual open space.

Response: This suggestion is considered in the Alternatives section under P.U.D.

(46) Comment: Parking is inadequate in the area and traffic is hazardous.

Response: These issues are discussed in the text in the Transportation Impact section.

(47) Comment: The proposed development would increase pressure for construction on the remaining vacant sites and will increase property values, making it more difficult for the City to acquire the land around Grandview Park.

Response: It is not possible to assess whether the construction of this proposal would increase development pressures in adjoining lots, nor is it possible to determine whether the proposal would increase or decrease property values surrounding the site.

Following are paraphrased comments on the Draft EIR which were transmitted to the Department of City Planning in writing.

Letter from Assemblyman Leo McCarthy dated January 20, 1975

(48) Comment: The report does not sufficiently address the extreme auto congestion and accessibility for Fire Department vehicles. The Commission is urged to consider the extension of Grandview Park to include the subject property.

Response: Both of these concerns have been responded to previously. See response to comment 1.

Letter from Stephen Kay dated February 3, 1975

(49) Comment: The project would cost the city more in the loss of open space than it would gain in taxes. It will not replace dilapidated housing. The site would be good for public open space.

Response: These issues were responded to previously. See response to comment 14.

Letter from A. R. Roderick dated February 4, 1975

(50) Comment: The project would destroy the site's value as open space. Additionally, the site does not have adequate access.

Response: These issues were previously addressed. See response to comments 1 and 41.

Letter from James J. Finn dated February 4, 1975

(51) Comment: Mentions narrowness of streets, makes comments and corrections of original text concerning transit and automobile traffic.

Response: The letter is reproduced as Appendix 142. The text has been modified as appropriate in those areas found to require correction or development as a result of this letter. See the Transportation Impacts discussion.

Letter from Mr. Leon E. Salanave

(52) Comment: This site along with portions of Mount Sutro is all that remains of the sand dune plant community. The site need not collect trash and be run down if it were public open space. Therefore, the site should be

(Comment 52 continued):

acquired by Proposition "J" funds.

Response: The Alternatives section of this report discusses the possibility of acquisition.

The following persons testified at a public hearing held before The Planning Commission of the City and County of San Francisco on June 12, 1975.

Mr. Tim Eichenberg, Staff-person SPEAK

Ms. Gladys Elkus

Mr. George J. Morris

Mr. Morris Brill

Mr. Leon Salanave

Ms. Alice Kay

Ms. Margaret Shamlian

Mrs. Hagedorn

Mr. Stephen Halpern

Dr. Stella Tennenbaum

Mr. Rolland Louden

Mr. C. E. Olson

Ms. Dianna Shindler

Ms. Betsy Levin

Ms. Marsha Lindeen, representing SPEAK

EE74.72 - Golden Gate Heights

Below are paraphrased comments presented at a public hearing on June 12, 1975.

Mr. Tim Eichenberg, President, Sunset-Parkside Education and Action Committee

COMMENT 1: In view of the fact that the streets are proposed for widening, requiring alterations in the architectural plans, I think special care will be required in designing these buildings since they are in a special geological study area to make sure that they are safe for people to live in.

RESPONSE 1: The foundation recommendations for this project were made by a licensed soil engineer pursuant to the requirements of the Community Safety Element of the Master Plan. The adequacy of the proposed plans will be checked by engineers in the San Francisco Department of Public Works.

The foundation recommendations made for this project will apply to any redesign or relocation of the buildings on this site.

COMMENT 2: The draft is not adequate, accurate and objective as required by the California Environmental Quality Act and the San Francisco Administrative Code.

RESPONSE 2: The final version of this EIR contains responses to all the objections raised in response to the previous drafts of this report, and revisions to the text have been made. According to judicial opinion resulting from previous litigation, these comments and revisions need not constitute an exhaustive report. The sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible (Environmental Defense Fund Inc. vs. Corps of Engineers of U. S. Army) (5th Circuit 1974) 492F.2d1123, 1131.

COMMENT 3: The California Regional Water Quality Control Board, in two letters to the Department of City Planning, has stated that the EIR is deficient and inaccurate in discussing the impacts of the proposed development on the water quality and sewage treatment in San Francisco (letter read into the record).

RESPONSE 3: The final version of this report contains wording concerning sewage treatment which has been approved by staff of the Regional Water Quality Control Board.

COMMENT 4:	The objections of the Fire Department to the proposed development have not been adequately dealt with or sufficiently incorporated into the report, nor were these objections adequately dealt with in the responses.
RESPONSE 4:	The final version of this report correctly presents the objections of the Fire Department. Further, the Mitigation section of the final report presents a mitigation measure designed to meet the previous objections of the Fire Department. This mitigation measure has been approved by the Fire Department.
COMMENT 5:	Since there is a proposal to rezone the affected area from R-1 to R-1-D, the EIR process cannot be completed until new architectural plans are presented in the EIR showing R-1-D development.
RESPONSE 5:	The Alternatives section of the EIR presents the impacts of the development under R-1-D zoning and presents the potential nature of the design under the R-1-D zoning district.
COMMENT 6:	More detail is necessary in the EIR to assess the impact of the project on the following City policies contained in the Urban Design Plan and the Conservation and Open Space Elements of the Comprehensive Plan: (1) To preserve in their natural state the few remaining areas not already developed (UD Conservation Policy No. 1).
RESPONSE 6:	The proposed project will not change this policy. The effect of the policy on the proposed project has been dealt with at some length (see Open Space alternative).
COMMENT CONTINUED 7:	UD Neighborhood Environmental Policy No. 10 states "encourage or require the provision of recreational space in private development."
RESPONSE 7:	The EIR states this policy in the Alternatives section dealing with Planned Unit Developments.
COMMENT CONTINUED 8:	The discussion of Policy No. 1, in Policies for City Pattern of the Urban Design Plan, states that overlooks and other viewpoints for appreciation of the City and its environs should be protected and supplemented by the limitation of buildings and other obstructions.

RESPONSE 8: The EIR contains a discussion of the project's effect on view blockage, both of views from homes near the proposed site and from views of the area from a distance.

COMMENT CONTINUED 9: Land Conservation Policy No. 5 says "Prohibit construction as a general rule on land subject to slide or erosion."

RESPONSE 9: The EIR contains extensive discussions of the soil stability of this site, both in the text and in the appendices. The only way that building can be completely prohibited from any site in the City where a qualified engineer indicates that buildings can be built to meet reasonable contingencies is through public acquisition. This alternative has been discussed in the Alternatives section under Open Space.

COMMENT CONTINUED 10: Protect rare and endangered plant species (Flora and Fauna Conservation Policy No. 3).

RESPONSE 10: The EIR states the impact on the rare and endangered Dune Tansy located on the portions of the site to be built upon. The letter from Dr. Breedlove reproduced in the Appendix, places this impact in perspective by indicating other locations of the Dune Tansy.

COMMENT 11: More detail is required to demonstrate how the water, electricity, gas and disposal of solid and liquid wastes services are to be provided to the proposed development.

RESPONSE 11: The EIR goes into detail concerning the provision of each one of these services. Water provision is discussed on page 23 and impact on water supplies is discussed on page 44. Electricity would be provided in the normal manner and the impact of this development on energy supplies is located on page 45. The EIR goes into some detail on energy consumption, including presentation of gas and electrical consumption charts for the project. Also, energy mitigation is discussed in the Mitigation section. Liquid and solid waste disposal service availability is discussed on page 30 and the impact of this project on this service is discussed on page 44. In a developed urban area, where provision of utilities does not involve expansion of service area, further discussion of this topic in an EIR would serve only to distract attention from more significant impacts.

Mrs. Gladys Elkus

COMMENT 12: The EIR is inadequate because most of the seismic and soil reports come from one engineering firm which is employed by the developer.

RESPONSE 12: The fact that a soils engineer is hired by the developer does not imply a bias. A soils engineer is held legally responsible for the performance of foundations built to his recommendations by State law. Given this legal liability, it is not necessary for more than one engineer to be consulted. The nature of the problems of the proposed site was not considered to be sufficiently unusual so as to require consultation with additional experts. There was no indication that further useful information could be gathered on this subject that would justify the added expense.

Mr. Harold Gilliam, author of The Natural World of San Francisco and Environmental Consultant to the Army Corps of Engineers.

Letter read into hearing record by Mrs. Gladys Elkus.

COMMENT 13: The letter noted the presence of dune sand in this area and went on to point out that building on sloping dune sand poses particular hazards. The letter states that there has been no studies of liquefaction on sandy hillsides. It stated "I commend to your attention page 34 of the EIR in which the engineer referred to the 'local liquefaction potential,' 'potential landslide hazard,' and the possibility of 'large scale failures within wet sands underlain by shales'." The mitigation measures mentioned in the EIR are designed to reduce seismic hazards but not to eliminate them.

RESPONSE 13: The quotations from page 34 of the text are taken out of context. The reference to local liquefaction potential is found in a longer sentence quoted from the report titled San Francisco Seismic Safety Investigation by John A. Blume & Associates, 1974, which refers to dune sand in general. The quote says "...moderate to high stability except for local liquefaction potential." For liquefaction to occur, ground water must be present in the immediate vicinity. Ground water is not likely to be present close to the surface of a high sand hill. Therefore, the liquefaction potential in this particular locality is not high.

The EIR acknowledges that the site is in an area of potential landslide hazard and states that the potential of the project may be to increase the vertical load on the slope and to increase the chance of gradual creep or sliding in the event of an earthquake.

The reference to large-scale failures is from the soil engineer's foundation investigation dated 8/25/71 for Block 1928B, which states in reference to the soil conditions on Lots 14 through 32 that they are "...particularly sensitive to seismic loadings which may under certain magnitudes and conditions create large-scale failures within wet sands underlain by shales." A follow-up report dated 1/4/72 concluded that "the site material should react well under all but moderate to severe earthquake conditions."

The EIR does not state that the seismic hazards would be eliminated because no soil engineer would be willing to claim that *any* foundation recommendation would indeed eliminate all seismic hazards any more than adherence to a building code can eliminate all fire hazards. It is the responsibility of a soil engineer and of regulatory agencies to provide reasonable and feasible security for the public's safety. Permitting only building designs that have completely eliminated hazards would preclude all building activity.

Mrs. Gladys Elkus

COMMENT 14: The EIR is inadequate because certain of the comments and responses from the previous hearing have been placed out of order in the Comments and Responses section of the Appendix.

RESPONSE 14: The comments and responses referred to have been untangled and printed in the correct order in this version of the EIR.

COMMENT 15: The EIR fails to deal satisfactorily with preserving the environment by openly acknowledging vast amounts of irreparable destruction. In the section entitled Irreversible Environmental Impacts the impacts are stated truthfully, namely destruction of the site's natural character and permanent alteration of the land form.

RESPONSE 15: It is not the purpose of an environmental impact report to prohibit projects that would damage the environment nor to impose mitigation measures. It is the purpose of an environmental impact report to state the impacts of a project and to report what mitigation measures are available. Any alternative, including the "no project" alternative would have some environmental impacts.

COMMENT 16: The report is inaccurate because it rationalizes residential development on the basis that it represents the highest and best economic use of the land and makes agricultural or mineral extractive uses the only alternatives.

RESPONSE 16: Residential development is the highest and best permitted economic use of this property. Alternatives desired by those opposing the development are vacant land or purchase by the public for open space. Neither of these alternatives represents an economic use of the property by its present owner. Other economic uses available in the City would be commercial or industrial uses which are less feasible than agricultural or mineral extractive endeavors, which would be low-intensity uses. A portion of this site was, in fact, used as a quarry. Park use of the land is discussed in the alternatives chapter.

COMMENT 17: The EIR does not refute statements regarding Master Plan elements which present arguments opposing the development.

RESPONSE 17: It is not the purpose of an EIR to refute policies of the Master Plan which argue against the subject proposal. The implementation of most of those policies mentioned would require public acquisition of the property. For such implementation not to occur, it is not necessary to refute the policies themselves. It is sufficient that funds not be available for such acquisition.

Mr. George J. Morris

COMMENT 18: I live just above the area the previous speaker was referring to and I don't have any feeling of my home being unsafe. I represent the Sunset Heights Improvement Club whose Board of Directors forwarded a letter to you in favor of the project.

NO RESPONSE

Mr. Morris Brill

COMMENT 19: My car is left on the street quite often and has been struck because of the narrowness of the street

NO RESPONSE

Mr. Leon E. Salanave

COMMENT 20: The word "rare" found on page 21 in the body of the report is still in quotation marks.

RESPONSE 20: Instructions to remove the quotation marks were not followed. This correction has now been made.

COMMENT 21: The above fact indicates that this EIR is seeking to justify the proposed development by minimizing the environmental impacts. Another example is when it states that residential developments are the highest and best economic use of the land.

RESPONSE 21: The first example is acknowledged by the authors who have attempted to correct the report. The second example has been responded to above, in Response 16.

Mrs. Alice Kay

COMMENT 22: The EIR states that the proposed buildings are designed to conform to the neighborhood. I disagree because most of the buildings in the area are detached whereas the proposed buildings are not. The buildings that have been built on Lomita and Lawton Streets are out of context with the character of the neighborhood because they are not detached buildings.

RESPONSE 22: It cannot be stated that the proposed buildings are out of character with the neighborhood if they are similar to the buildings adjoining the site which have been recently built.

Dr. Stella Tennenbaum

COMMENT 23: The soil engineer for this project has recommended drainage terraces for one block of the site. The engineer has stated that these terraces will have to be cleaned periodically by hand. My question is, who will do this work? The purchaser, the developer, or will the City be responsible?

RESPONSE 23: Subsequent owners of the properties involved will be responsible for maintenance of that portion of the drainage terrace that is on their property. Failure to do so, which results in damage to surrounding properties, would make that property owner liable.

Mr. Rolland Louden

COMMENT 24: The EIR is inadequate because it does not consider the impact of the development on the attitudes and sensibilities of the large number of people living in the area who prefer to see their horizon marked with natural habitat rather than a housing project.

RESPONSE 24: While it is possible for an EIR to report on what people have announced their feelings to be regarding a particular issue, it is not possible for an EIR to assess the impact on something as subjective as sensibilities.

C. E. Olson

COMMENT 25: As a certified public accountant, I can say that if these homes are going to have 2-1/2 children each, as the report states, the City is not going to come out on it taxwise.

RESPONSE 25: In view of the ability of existing City facilities (with the possible exception of public transit) to absorb the needs of the proposed project without expansion of service capacity or staff, it is not clear where extensive City costs would be expected to arise.

COMMENT 26: There is no traffic survey.

RESPONSE 26: A statement from the City Traffic Engineer regarding present capacities of streets in the area has been added to this document. The traffic impact of the development, as expressed in terms of projections of traffic generation and destinations, have been made, along with projections of the destinations and the routes used. This portion of the document has been reviewed by the Transportation Planning Section of the Department of City Planning and judged to be adequate.

COMMENT 27: What is the purpose of including the information that Judah Street and Seventh Avenue are transit preferential streets since they do not serve Golden Gate Heights?

REPONSE 27: This information may be useful in assessing the quality of public transit serving the area.

COMMENT 28: After indications of general confusion concerning the term "transit preferential," a member of the audience stated: "The term has no meaning to us. Since we are expected to read and criticize the report, it should be worded so that we can understand it."

REPONSE 28: The discussion of transit preferential streets includes a definition of the term. This definition, however, assumes that the reader understands that the term "mass transit" refers to public transportation by the use of buses, streetcars, cable cars, etc., and does not refer to private automobile traffic. Further information about "transit preferential streets" is available in the Transportation Element of the Master Plan.

Ms. Diana Schindler

COMMENT 29: The EIR does not mention the problem of erosion during construction.

RESPONSE 29: The recommendations of the soil engineer cover both the soil stability during construction and after construction. In the event of damage to surrounding properties, the parties liable would be those parties involved in the development who could be found negligent.

Ms. Betsy Levin

COMMENT 30: The Parking section on page 51 is inadequate because last night I found 26 automobiles parked on the sidewalk in this area.

RESPONSE 30: This information does not refute the information presented on page 51. The discussion of parking in the EIR refers to the occurrence of parking on the street adjacent to the sites proposed for development. It does not refer to the occurrence of parking along the frontages of the portions of Golden Gate Heights that are already developed.

Ms. Marsha Linden

COMMENT 31: The site of the proposed development is something that we really should be preserving because it has real value to the whole community.

NO RESPONSE

COMMENT 32: Nothing has been said concerning who's going to pay for the street widening.

REPONSE 32: The developer of the project will bear all costs for the widening of the street.

COMMENT 33: The report states that the homes would generate only one trip at the evening rush hour, but that's unlikely if there will be two cars for each dwelling.

RESPONSE 33: This estimate was based on the best evidence available to the City traffic engineers.

COMMENT 34: There is no survey to indicate that 50% of the people would take transit.

RESPONSE 34: Table III on page 49 contains Census Tract information from the 1970 census showing where people work and their mode of travel.

COMMENT 35: We do not have a presentation of the total accumulative effect of both rain water and waste water from the development, and how this compares to the capacity of the Richmond-Sunset treatment plant. What will we do while we're waiting for the new treatment plant to be built?

RESPONSE 35: Projections of both rain water runoff and of liquid waste generation are found in the Impact section. A statement concerning the impact on the Richmond-Sunset plant is also found in the Impact section. Interim measures to improve the Richmond-Sunset plant are found in the Appendix.

Mrs. Margaret Shamlian

COMMENT 36: The EIR does not say what will happen to cars attracted to the residential development that are not parked in garages or driveways.

RESPONSE 36: Comments from the public during the February 20, 1975 public hearing assert that there will be a greater occurrence of on-street parking in the vicinity as a result of the proposed project. The authors of the report have no information to refute the contention made in the comments by the public. It is reasonable to assume that those automobiles attracted to the area which cannot be parked in garages or driveways will be parked on the street. Further, there is no information available to indicate how many cars will specifically fall into this category.

COMMENT 37: The EIR gives only vague consideration to the overcrowding of bus and streetcar lines which service the area. It does mention that the #66 and the #10 bus lines are already operating in excess of the maximum desirable loads at peak periods, but no mention is made of the ramifications of possibly 100 more people using these lines daily.

RESPONSE 37: The consideration given to the transit service and the overcrowding need not be considered vague. The report goes into some detail as to the crowded conditions existing at present. Muni personnel estimate that 35 additional passengers would be generated by the development. These passengers would be divided among the various lines, directions and vehicles and they could be accommodated by the already crowded rush hour service.

COMMENT 38: The illustrations on pages 41 and 42 (photographs with view blockage of the buildings superimposed) give a wrong impression. They focus on the intersection in such a way as to give the appearance of a wider street than is actually there.

RESPONSE 38: The intention of the photographs is to give an impression of the amount of view blockage from various locations frequented by the public. They are not intended to give an impression of the widths of the streets.

COMMENT 39: The illustrations on pages 41 and 42 do not reflect accurately the heights of the buildings as shown on Figure 8, page 11. A true representation would show that the view would be much more obliterated.

RESPONSE 39: This issue was brought to the attention of an architect in the Department of City Planning. His reaction was that the illustrations on the photographs reasonably approximate the height of the proposed buildings and that any inaccuracies would not be significant.

COMMENT 40: The decision to widen the streets after the EIR was published gave the opponents no time to respond to the effects of the street widening.

RESPONSE 40: The public hearing on the subdivision proposal will be an appropriate time to address comments to the issue of the street widening. If a private citizen wanted to investigate any probable effects of street widening, there has been considerable opportunity to do so since those opposed to the proposed construction have suggested this alternative for months.

COMMENT 41: Comment #7 in the Comments and Responses section for the 2/20/75 hearing talked about the loss of open space if the development should be allowed, and the response was to add a footnote defining "active open space" which does not answer the question.

RESPONSE 41: Comment #7 in the previous Comments and Responses section disagreed with the statement in the EIR that the subject site does not serve as active open space and suggested that the present use of the site regarding recreation use be clarified. It was not the intention of that comment to disclose the impact of the project on the present site. The footnote, by defining active open space, clarified the use of the subject site regarding recreation.

COMMENT 42: Comment #25 tells of the number of accidents that have occurred on these streets due to their narrowness. The response to that comment stated that a statement about increased probability of accidents as a result of this proposal is to be found on page 43, but it is not there.

RESPONSE 42: It is acknowledged that that statement was omitted. It has been placed in this copy of the report.

COMMENT 43: There is no mitigation of the transportation impacts.

RESPONSE 43: The City could mitigate this impact by adding new bus lines or new buses to existing lines. This possible mitigation measure was not included because it is unlikely that the measure would be implemented, due to the greater need to improve transit service in other parts of the City and the limited funds available.

COMMENT 44: According to Mr. Thomas Matoff, transit planner for the Muni Railway, even if 50 more people rode the #66 line in the morning, each bus would have to take ten more people during rush hour and the bus lines for Golden Gate Heights are already filled.

RESPONSE 44: Based upon the modal splits reported for CT303 in 1970, Mr. Matoff estimates there would be about 35 work trips a day at rush hour generated by the proposed development. If all these rode the #66 line, he estimates 24 of these would be east bound (or about 5 per bus) and 11 would be west bound (or about 2 per bus).*

COMMENT 45: The only way to add service to the existing #66 line is to steal from other lines, but all the equipment that can run is being used. If they could add drivers and buses, it would cost $20,000 per year for a driver and the operating costs for the additional vehicle would be between $35,000 and $40,000 a year. The vehicle itself would cost $60,000, so the first year's expenditure would be $120,000 and each succeeding year's would be $60,000.

REPONSE 45: Mr. Matoff reports that the $35,000 to $40,000 annual operating cost includes the $20,000 driver cost so the total annual figures quoted should be reduced by $20,000. The expense would not all be deficit because expansion of service would bring in additional revenue.* Mr. Matoff's conclusions agree with the letter dated 2/4/75 by James J. Finn, Director of Transportation of the Public Utilities Commission, which appears in the Appendix.

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*Telephone conversation with Thomas Matoff, Muni Transit Planner, 6/30/75.

Written Comments

Mr. Greg de Montreve

Letter to R. Spencer Steele, Zoning Administrator, Department of City Planning, dated June 10, 1975.

COMMENT 46: The streets are too narrow to provide access for fire fighting vehicles. They should be widened at the expense of the developer.

RESPONSE 46: The EIR states the position of the Fire Department concerning the widths of streets in the area in the Fire Protection section of the Impact chapter. The Mitigation chapter states that the developer will widen certain portions of 14th and 15th Avenues, at his own expense, so as to meet the Fire Department requirements.

Mr. Thomas Q. Chan, Resources & Planning, San Francisco Water Department

Letter to Dean L. Macris, Director of Planning, dated June 10, 1975.

COMMENT 47: The capacity of Stanford Heights Reservoir is 12.9 million gallons.

RESPONSE 47: This figure has been corrected in text. The specific capacity of this reservoir is not relevant to the project as water supply is adequate for all domestic and fire-fighting needs.

COMMENT 48: The average operating pressure in the project area varies from 33 to 76 psi. The statement that 50 psi is the City wide average is a "misnomer" (sic); we do not quote a City average because of the diversity of pressure.

RESPONSE 48: Despite the variation, 50 psi is close to the mean, according to other City engineering staff.

COMMENT 49: On page 44 (draft of 5-12-75), the Department of Public Works is reported to estimate per capita water consumption to be 137 gpd. The Water Department publishes a figure of 139 gpd per capita which is City-wide commercial, industrial and residential consumption divided by the City's resident population.

RESPONSE 49: This difference is statistically insignificant in arriving at an estimate of water consumption for the project. Both 137 and 139 gpd are known to be high for residential water consumption as the citywide average is skewed by industrial and commercial consumption. The residential average could easily be one-half of the estimated figure.

Rene' A. Gautier, Chief, Division of Planning and Research, San Francisco Fire Department.

Letter to Dean L. Macris, Director of Planning, dated May 29, 1975.

COMMENT 50: Line 8 on page 43 (draft of 5-12-75) is incorrect. The required curb-to-curb street width allowing parking on one side only is 21 feet while the dimension mentioned in the text allows parking on both sides of a street.

RESPONSE 50: The text has been corrected to reflect the proper dimensions (Impact chapter, Fire Protection section).

Letter to Walter Newman, President, San Francisco City Planning Commission, dated June 3, 1975.

COMMENT 51: Certain sections of some streets are too narrow. "...the Fire Department goes on record that it will not be able to operate if parking is permitted in these sections." It is unrealistic to believe that "no parking" signs would be honored. It is the Fire Department's recommendation that the streets be widened to a minimum of 21 feet at all points in the projected development area.

RESPONSE 51: The position of the Fire Department was stated in the report (Impact chapter, Fire Protection section). Subsequent to the letter containing the above comment, the developer has proposed a street widening plan acceptable to Chief Gautier.

Mr. Griffith L. Johnson, Chief of Planning of the California Regional Water Quality Control Board.

Letter to Dean Macris, Department of City Planning, dated June 10, 1975

COMMENT 52: On page 44 (draft 5-12-75) the Richmond-Sunset Plant provides sedimentation and chlorination - not filtration. The treatment capacity of the plant presented by the EIR is questioned.

RESPONSE 52: The statement concerning filtration has been corrected. A statement, approved by staff of the Regional Water Quality Control Board, concerning the treatment capacity of the plant has been added to the text (Impact chapter, Liquid Waste Disposal section).

SAN FRANCISCO

CITY PLANNING COMMISSION

RESOLUTION NO. 7349

WHEREAS, A draft environmental impact report, dated May 12, 1975, has been prepared by the Department of City Planning in connection with EE74.72, Golden Gate Heights Residential Development, on the property described as follows:

> All of Assessor's Blocks 1860B and 1923B; Lots 23-35 in Assessor's Block 1929A; and Lots 3-13 in Assessor's Block 1928A; and

WHEREAS, The Department duly filed a notice of completion of the draft report with the Secretary of the California Resources Agency, gave other notice and requested comments as required by law, made the report available to the general public and satisfied other procedural requirements; and

WHEREAS, The City Planning Commission held a duly advertised public hearing on said draft environmental impact report on June 12, 1975, at which opportunity was given for public participation and comments; and

WHEREAS, A final environmental impact report, dated July 3, 1975, has been prepared by the Department, based upon the draft environmental impact report, any consultations and comments received during the review process, any additional information that became available, and a response to any comments that raised significant points concerning effects on the environment, all as required by law; and

WHEREAS, On July 3, 1975, the Commission reviewed the final environmental impact report, and found that the contents of said report and the procedures through which it was prepared, publicized and reviewed comply with the provisions of the California Environmental Quality Act, the Guidelines of the Secretary for Resources and San Francisco requirements;

THEREFORE BE IT RESOLVED, That the City Planning Commission does hereby find that the Final Environmental Impact Report, dated July 3, 1975 concerning Golden Gate Heights Residential Development is adequate, accurate and objective, and does hereby CERTIFY THE COMPLETION of said Report in compliance with the California Environmental Quality Act and the State Guidelines;

AND BE IT FURTHER RESOLVED, That the Commission in certifying the completion of said Report does hereby find that the project as proposed will not have a significant effect on the environment;

AND BE IT FURTHER RESOLVED, That the Commission, before acting on the requests to rezone this area and to subdivide and resubdivide portions of the development site under ZM75.12, R118.74.14 and R118.74.15, does hereby certify that it has reviewed and considered the information contained in said Final Environmental Impact Report.

I hereby certify that the foregoing Resolution was ADOPTED by the City Planning Commission at its regular meeting of July 3, 1975.

Lynn E. Pio
Secretary

AYES: Commissioners Fleishhacker, Miller, Newman, Porter, Ritchie, Rueda

NOES: None

ABSENT: Commissioner Crowley

PASSED: July 3, 1975

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Public Agencies

Department of Housing and Urban Development
San Francisco Area Office
One Embarcadero Center, Suite 1600
San Francisco, CA 94111

Association of Bay Area Governments
Hotel Claremont
Berkeley, CA 94705

Branch Department
San Francisco City Library
Civic Center
San Francisco, CA 94104

San Francisco Municipal Railway
949 Presidio Avenue
San Francisco, CA 94115

San Francisco Department of Public Works
Room 260, City Hall
San Francisco, CA 94104

San Francisco Water Department
425 Mason Street
San Francisco, CA 94102

San Francisco Fire Department
260 Golden Gate Avenue
San Francisco, CA 94102

San Francisco Recreation and Parks Department
McLaren Lodge
Golden Gate Park
San Francisco, CA 94117

Human Rights Commission
1095 Market Street
San Francisco, CA 94103

Citizen Groups

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San Francisco, CA 94122

Sunset Heights Improvement Club
1738 Ninth Avenue
San Francisco, CA 94122

Golden Gate Heights Club (150)
849 Noriega Street
San Francisco, CA 94122

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